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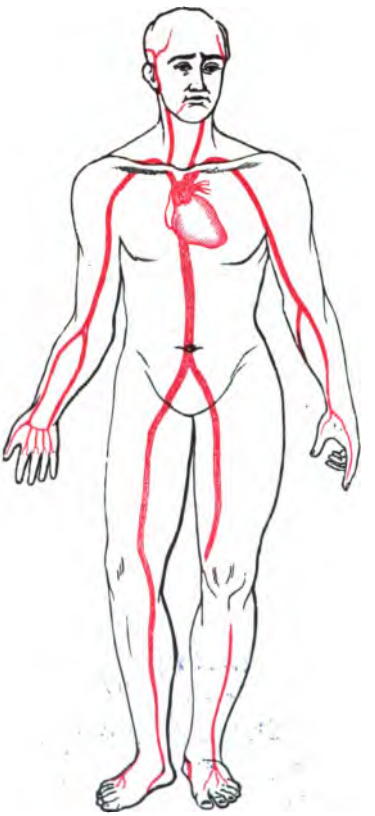

SHOWING THE COURSE OF THE PRINCIPAL BLOOD VESSELS.

See page 67.

WHAT TO DO FIRST

IN

ACCIDENTS AND EMERGENCIES.

A MANUAL

EXPLAINING THE TREATMENT OF SURGICAL AND OTHER INJURIES IN THE ABSENCE OF THE PHYSICIAN.

BY

CHARLES W. DULLES, M.D.,

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SECOND EDITION, REVISED AND ENLARGED.

WITH NEW ILLUSTRATIONS.

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PREFACE TO THE SECOND EDITION.

The fact that the first edition of this little book has been for some time exhausted, and an observation of the present widespread public interest in the acquirement of just such information as it was intended to convey, have led the author to the conclusion that a second edition might prove not only useful but timely.

In preparing this, so much new matter has been added, and so many new illustrations, that the result is practically a new book. In its present form, it is hoped it may be fitted to fill a wider sphere than before; and that, while it may still lead no one into the error of presumption it may increase the real helpfulness of larger numbers and more varied classes in the community.

If the author may be permitted to suggest the way in which the instrument he has constructed ought to be used, it is as follows: Let it be read over, at least once, as carefully and as studiously as possible, so that the reader may make the acquaintance of its

suggestions; and then let it be kept in some handy place, where it can be referred to immediately when an emergency arises. In order to make it available for sudden necessity, pains have been taken to make the index as complete as possible, and the typography has been so arranged as that leading words may catch the eye on every page.

Philadelphia, May, 1883.

PREFACE TO THE FIRST EDITION.

Whoever has seen how invaluable, in the presence of an accident, is the man or woman with a cool head, a steady hand, and some knowledge of what is best to be done, will not fail to appreciate the desirability of possessing these qualifications. To have them in an emergency, one must acquire them before it arises, and it is with the hope of aiding any who wish to prepare themselves for such demands upon their own resources that the following suggestions have been put together. They are not meant to be elaborate, but simple and practicable. They cannot take the place of calling a physician or surgeon, but may fill up with helpful action what might otherwise be a period of inaction and despair, before skilled assistance arrives. With this view I trust they may prove of some value to the public, to whom they are offered.

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ACCIDENTS AND EMERGENCIES.

PRELIMINARY REMARKS.

There is nothing so important in the presence of an accident or emergency as that some one with coolness and information enough should assume command and begin to set things right. Such an one will rarely fail to be recognized by those less efficient, and will usually find little difficulty in so directing them that they shall render some valuable assistance, or, at least, do no harm to the sufferer. Bystanders should first be urged not to crowd; to leave room for breathing and action. Any screaming or wailing should be stopped, if possible. Then enough, and no more persons than are needed, should be called on to assist in removing the one in danger, or if he be crushed, in removing whatever presses upon him. Next his body should be placed in a comfortable position, lying down, with the head a very little raised; after which an investi-

gation may be made to find out, as nearly as possible, what is wrong, and a line of subsequent action decided upon.

Some one should now be dispatched for a doctor, with a written message, if possible, and certainly with one that shall give the doctor a good idea of what he may expect to find when he arrives, so that he may come provided with necessary instruments.

While awaiting him, whatever may be advisable is to be done by those at hand. Clothing may have to be loosened or removed, efforts at resuscitation made, a stretcher provided, or other means of transportation. Hot or cold applications may be needed and should be got ready. Temporary splints or means to control bleeding may be required. These the bystanders ought at once to attend to. One thing, however, they ought not to do. That is, to give large quantities of whisky or brandy, as is the almost invariable custom with people who know nothing, but want to do something. If stimulants seem to be called for, the non-medical had better stick to hot tea or coffee, or milk; for alcoholic stimulants, except in small quantities, are, as a rule, not only unnecessary, but actually harmful. They often injure the patient, mislead the doctor, and interfere with the proper treatment of the case.

Exceptions to this general statement may be discovered; but they are exceptions—this is the rule.

Another important point to be observed is, not to

do too much. It will be making a bad use of instructions designed to bridge over the interval between the occurrence of an accident and the coming of one whose whole time is given to the work of healing, if one who knows no more than can be gleaned from a little manual should act as if it had made a veritable doctor of him. Such presumption might lead to great mortification of the *amateur* and great injury to the sufferer. The true principle is, when the urgency is pressing, to do what is known to be helpful, and when one is not sure, to do nothing.

Obstructions to Respiration.

Drowning. It may seem almost absurd to say that the first thing to be done when one has been exposed to drowning is to remove the person from the water. Yet I well remember to have seen, some years ago, the revolting spectacle of a woman's body, fastened with a rope, floating in a river, and gazed at by hundreds of curious people. Upon inquiry, a policeman gravely informed me that no one dared take it out before the arrival of the Coroner. This is a mistake; any one who thinks there is a chance of resuscitation should remove from the water a person presumed to have been drowned, and at once set about the work.

If Natural Breathing has ceased, the first thing to be done is to free the body from any clothing that binds the neck, chest or waist, turn it over upon the face for a moment, thrusting a finger into the mouth and sweeping it round, to bring away anything that may have gotten in or accumulated there. Then the body should be laid out flat on the back, with something a few inches high under the shoulders (anything will do: a folded blanket, or shawl, or coat, or a stick of wood), so as to cause

the neck to be stretched out and the chin to be carried far from the chest. The tongue should now be drawn well forward out of the mouth and held by an assistant, or, if there be no one to do this, a pencil or small stick may be thrust across the mouth on top of the tongue and back of the last teeth, to keep the mouth open and the tongue out of the throat. An effort to secure artificial respiration should now be begun. The simplest way to do this is for some one to place himself on his knees behind the head, seize both arms near the elbows and sweep them round horizontally, away from the body and over the head till they meet above it, when a good, strong pull must be made upon them, and kept up for a few seconds. This effects an inspiration—fills the lungs with air, by drawing

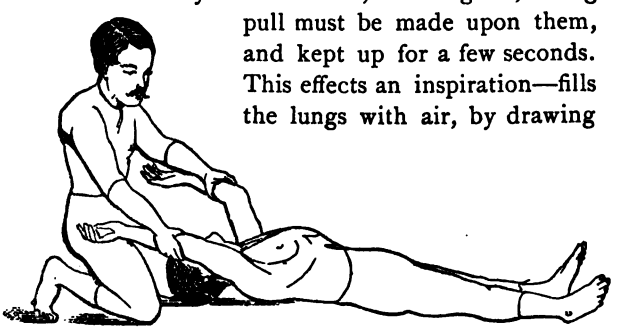


FIG. 1.

the ribs up, and so enlarging the cavity of the chest. The second manœuvre consists in returning the arms to their former position alongside the chest, and making strong pressure against the lower ribs, so as to

drive the air out of the chest and effect an act of expiration. This need occupy but a second of time. If this plan is regularly carried out it will make about sixteen complete acts of respiration in a

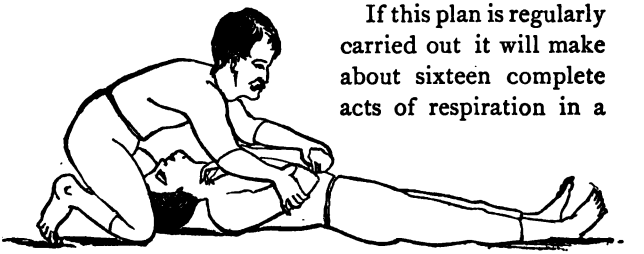


FIG. 2.

minute. It should be kept up for a long time, and not abandoned until a competent person has ascertained that the heart has ceased to beat. The cessation of the pulse at the wrists amounts to nothing as a sign of death; and often life is present when only a most acute and practiced ear can detect the sound of the heart. In a moderately thin person, deep pressure with the finger ends just below the lower end of the breast bone may sometimes reveal pulsation in the aorta, the main artery of the body, when it cannot be found anywhere else.

It is important that the wet clothing shall be removed as soon as possible from a drowned person. This can always be done without interrupting the artificial respiration. If exposure must be avoided, something may be laid over the body (a coat, a shawl, a blanket, a sail), and the wet clothes

loosened under it and drawn down over the feet. Then the body may be quickly slipped on to something dry, and covered with some other fabric, if the first has become wet, while this, in its turn, is pulled away from underneath.

Warmth is to be secured by any means which ingenuity may suggest—hot bottles, or plates, or bricks, or stones, or even boards that have lain in the summer sun. At the seashore there is plenty of hot sand, and often plenty of baking bathing costumes. The body and limbs may be gently, but constantly, rubbed toward the heart, to help the blood in its labored circulation. None of these things need interfere with the efforts to secure respiration, which must be uninterrupted.

Some stimulant is to be given as soon as it can be swallowed. Teaspoonful doses of whisky or brandy, in a tablespoonful of hot water, may be given every few minutes, till the danger point is passed.

As natural respiration begins to be attempted, it should be aided as much as possible by timing the artificial to it. It may be stimulated by applying smelling salts, or hartshorn, to the nose, by slapping the skin, or by dashing *hot* water upon the chest. Little by little it will take the place of this, but must not be left unwatched for some time.

Nothing but danger from cold or pressing necessity should prompt the removal from one place to another of a person who is being resuscitated, before this has

been thoroughly accomplished. If it cannot be avoided, it must be done with great care. After resuscitation the person should be put in a warm bed, being carried carefully, with the head low, and a watch kept to see that the breathing does not suddenly stop.

Where natural breathing has not ceased, all the steps just described should be carried out, with the exception of artificial respiration. But this should be had recourse to upon the first evidence that natural respiration is failing.

Strangulation, by hanging, or by anything which compresses the windpipe from the outside, is to be treated by re-establishing the respiration in the same way as for drowning. The obstruction is, of course, to be removed and natural respiration stimulated or artificial respiration employed.

Suffocation with Noxious Gases or Vapors calls for instant removal to the fresh air and the establishment of natural respiration, or of artificial till the natural is re-established, as described in speaking of Drowning. Gases like carbonic acid, the fumes of charcoal, and the collections in mines, wells or privies, are very dangerous to life. The removal of a person from a well full of a poisonous gas is a very difficult and delicate matter. Some attempt may be made to dislodge or dissipate the gas. Buckets of water may be dashed down, or an open umbrella lowered by the handle and rapidly

drawn up a number of times. But these efforts must not consume any more time than is required to prepare a man who can be lowered, securely *fastened to the rope*, so that he can attach another rope to the person overcome in the well. The rescuer must be brave, cool and strong, and those who lower him no less so. He may be somewhat protected by wearing a sack over his head, or having a thick vail over his face. But everything will depend upon the rapidity with which he and his comrades can do their work.

Choking caused by something sticking in the throat, gullet or windpipe demands its removal as soon as possible. It is not always easy to tell which of these latter passages is clogged, but usually there is active irritation, with coughing, when a foreign body lodges in the windpipe, while swallowing can be done quite readily. On the other hand, when the gullet is stopped it is usually impossible to swallow, and there is little or no tendency to cough, no matter how much the breathing may be interfered with. About the throat, it is not so hard to tell, for one can usually see or feel with the finger the offending body.

If a foreign body be within reach of two fingers, it may be pretty easily removed. If not, a pair of blunt-pointed scissors may be used like forceps. Or a hair pin may be straightened out and one end bent round so as to make a loop, and this used to try to dislodge the foreign body; or the handle of one

blade of a pair of scissors may be used in the same way. It has been stated that for foreign bodies in the throat, such as pieces of meat, etc., a simple mode of relief is to blow forcibly into the ear. This sometimes excites powerful reflex action, during which the foreign body is expelled. Such a plan is so easy of execution that it is certainly worth trying.

Children not infrequently get buttons, or coins, or marbles in their throats, and come near choking to death. These may often be pulled out, or expelled by vomiting, if this can be provoked. Holding the body up by the legs, with the head hanging down, has sometimes aided other efforts to get rid of such things. The responsibility of attempts to poke them down may well be left for the surgeon.

If pins, or needles, or fish bones, get stuck in the mouth or throat, it is sometimes an extremely delicate matter to remove them. Sometimes, on the other hand, they may be grasped with the fingers or a pair of blunt scissors—used like forceps—and pulled out. If this cannot be done, the patient should be made to lie down, and kept as quiet as possible in body and mind, till some one comes who can give relief.*

If foreign bodies get into the windpipe they will soon be coughed out, or require surgical skill for their removal. A moderate blow on the back with

* The practice, by adults, of putting pins in the mouth, is neither clean nor safe, and is to be discountenanced for both these reasons.

the open hand, or a quick strong squeeze of the chest, sometimes aids the coughing act; and inverting the body may assist in dislodging the foreign body if it be not too tightly wedged in.

In any case where the breathing is not seriously interfered with, it will be most prudent for non-medical persons to keep "hands off." For there may no longer be anything in the throat, though it appears there is; and it can do no good to make groping efforts to bring away foreign substances that have already gone down into the stomach, only leaving behind an irritation which deceives the patient and his friends.

When strange things, like coins, or marbles, or slate pencils, or nails, are swallowed by children (or adults), it is a mistake to give a purgative. The proper plan is to let the bowels alone and to give plenty of good solid food, so that the foreign body may be surrounded with the waste and carried out of the body without injuring the walls of the intestines.

Foreign Bodies in the Eye, Nose and Ear.

Foreign Bodies in the Eye. Small substances like cinders, dust or small chips of stone or metal, can usually be removed from the eye by very simple means. Sometimes there is at once a free flow of tears which washes them out. At others, the common way of catching the upper lid by the lashes and pulling it away from the eyeball and down over the lower lid, then letting it go so that as it recedes its under surface is swept by the lashes of the lower lid, will clear it out.

If this does not prove successful, a loop made of a horse hair, or a long human hair, can be passed under the lid and swept, from the outer side, toward the nose and drawn down. This may serve the purpose.

If it does not the upper lid must be everted, or turned inside out. This is easy to do. One way is to seize the lashes between the thumb and first finger, and to draw the edge of the lid away from the eyeball. At the same moment the end of the second finger is pressed against the skin of the lid above its edge. The patient is now told to look down, and, as

he does so, the lashes and edge of the lid are pulled upward toward the eyebrow, while the upper part is tucked under it with the end of the second finger. Another plan is to take a slender pencil, or knitting or crochet needle, and place it against the eyelid, parallel to and above the edge, and then to pull the edge up and turn it over this by means of the lashes.

In this way a large part of the eyeball and eyelid can be examined and any foreign substance removed. A magnifying glass is sometimes needed to see fragments that have given a great deal of trouble.

One must be on his guard against the sensation which is sometimes left after a foreign body has been removed from the eye. It often feels to the sufferer as though this were still in his eye when it is not. But a most careful search should be made before this is taken to be a self-deception; and even then it would be better to consult a more skilled person.

After removing a foreign body from the eye, the irritation may be sufficient to demand cool, wet applications, or even anodynes. Nothing is better than a thin mucilage of pure, clean gum-arabic poured freely in the eye. Or, a little laudanum may be poured into a heated cup, and when evaporated to a kind of jelly it can be thinned out with clear water and this poured into the eye. A bandage, loosely applied so as to shut out light and keep the eyeball rather quiet, often does much good.

When lime gets in the eye it burns very severely. At once the eye should be deluged with water, and a little vinegar or lemon juice and water (a teaspoonful of vinegar or lemon juice to a teacupful of water) poured over the eyeball.

Foreign Bodies in the Nose. Children sometimes place, or have placed, in their noses small bodies, such as marbles, buttons, peas, beans and other small grains. To get rid of them, the nose should be blown hard; or, sneezing may be excited by tickling the nose or giving snuff; or, the child may be told to take a full breath and then be given a smart blow on the back. Some one of these plans may dislodge the foreign body. If it does not, reasonable efforts may be made to fish it out with a bent hair-pin, a bodkin, the handle of a mustard or salt spoon, or something of that sort. But these efforts must not be rough or prolonged; for they may do much damage; and if a surgeon must be called, the sooner it is done the better. The longer it is delayed, the harder will be his work and the worse for the child. In case peas or beans are lodged in the nose, the danger is increased by the fact that if they absorb any moisture, they swell up and are very difficult to get away.

Foreign Bodies in the Ear. The removal of foreign bodies from the ear is more delicate than when they are in the nose, because there is no way of getting at them from behind, and

there is no natural force to be called to one's assistance. Consequently it usually requires special instruments. Yet, if no medical man be attainable at all, and if it be remembered that the outer passage of the ear is very deep and very delicate, something may be done.

If the body be a metal or mineral one, the ear may be syringed out thoroughly. The person's head must be held with the face down, as in this position gravity lends some assistance. Very gentle efforts may even be made to remove any foreign body with a crochet needle, or a bodkin, or an ear spoon, if it can be had. But with all these it must be remembered that great damage may be done by the least roughness.

If live insects get into the ear, oil or glycerine or salt and water should be poured in. Or, a plug of cotton soaked in a strong solution of salt and vinegar may be placed in the ear and the head turned over on that side.

An ingenious method, which has sometimes been successful, is to turn the ear at once to a bright light, so as to tempt the insect to back out, on account of the attraction which light has for all these creatures.

Fits or Seizures.

Unconsciousness, or Insensibility, occurs in many different conditions, and it is of great importance that something should be known about them by those who meet many strangers, or have the care of large numbers of employees. To this class belong railway officials and railway servants, manufacturers, superintendents of mines and public works, surveyors, constructors, and policemen. The former might often do priceless service to those who come under their care, and the latter might escape much blame and avoid some unfortunate mistakes, if they could always distinguish disease from disorder and drunkenness.

This, it must be acknowledged, is often hard to do. But so much the more reason is there for attempting to learn enough to prevent such shameful mistakes as are sometimes made. So, before speaking of the treatment of conditions when unconsciousness may be present, a little space may be devoted to considering, in a general way, how one may decide what unconsciousness is due to.

For our present purpose the causes of unconscious-

ness may be classified as: disorders of the circulation, disorders of the brain, poisoning, and intoxication.

Unconsciousness due to Disorder of the Circulation, or temporary failure of the heart, is familiarly illustrated in fainting. This may be brought about by a simple nervous influence, or by a sudden shock, or by loss of blood. In any case, the condition is easily recognized by itself or from its cause.

Unconsciousness due to Disorder of the Brain may depend upon disease or injury. Disease of the brain is recognizable, from its gradual approach, which can be learned from the sufferer's friends, and is not much more likely to prove perplexing than is fainting. On the other hand, injuries of the brain are usually accompanied by external signs, such as dirt, swelling, bruises or cuts, which show that violence has been inflicted; or, they occur under circumstances which make a suspicion of violence reasonable. In apoplexies some of the external evidences might prove misleading, but besides these there is often found an unequal dilation of the pupils, and paralysis on one side of the face and body. In the unconsciousness of epileptic convulsions there is usually little trouble in deciding what is present, from the frothing, and biting of the tongue or lips, with which every one is familiar.

Unconsciousness due to Poison may be caused by a poison generated within the body, an example of which sometimes occurs in serious kidney disease.

In such cases there are usually convulsions as well as unconsciousness, and often a dropsical appearance about the eyes and legs, very profound stupor and a smell like urine about the person affected.

The cause of poisoning by gases is generally easy to detect. The only insensibility due to drugs which is actually likely to be confused with intoxication is that caused by opium. But in this the pupils are strongly and rigidly contracted—the very opposite of what is seen in drunkenness.

Unconsciousness due to Intoxication is marked, it is true, by many signs of other insensibilities, but it has these peculiarities: the face is usually flushed, the body relaxed everywhere, the person capable of being roused by loud cries, the pupils dilated evenly, and a distinct odor of liquor to be discovered.

When a doubtful case arises the first thing to be done is to see if there is an odor of liquor to be discovered. If there is not, one may be sure he is not dealing with a case of intoxication. But if, on the other hand, the odor is present, one must not conclude at once that the case is one of simple drunkenness. For it often happens that liquor is given after an accident, and an accident may have happened to a man who had been drinking. To avoid mistake:—

1. *The head must be examined.* If there is a cut or a bruise, the only safe thing to conclude is that there is a brain injury, received before or after the liquor was taken.

2. *The pupils of the eyes must be examined.* If they are contracted, it is a case of brain disease or opium poisoning. If one is contracted and the other dilated, it is a case of brain injury or disease.

3. *The face must be examined.* If it is drawn and wrinkled on one side, and smooth on the other, it is a case of apoplexy, or stoppage of a blood vessel in the brain, or pressure upon one part of the brain.

4. *The mouth must be examined.* If it be frothy and if the tongue or the lip be bitten, it is a case of epilepsy or some other convulsive disorder—not simply intoxication.

5. *The arms and legs must be examined.* If one is stiff and one limber, it is a one-sided paralysis, or hysterics. If it be the latter, the person affected will usually resist any attempt that may be made to open the eyelids; which may be regarded as an infallible evidence of hysterics. At the same time close watching will generally lead to the discovery of some sign that the affected person is listening to what is being said about him or her.

After all these tests have been applied, there will still be a few cases where it will be hard to say—in the presence of an odor of alcoholic liquor—whether there is, or is not, some more serious trouble than mere drunkenness present. In these five cases the only safe course is to take it for granted that there is some other trouble present—even if there be intoxication too—though it be at the risk of being

sometimes deceived and imposed upon. When there is any such doubt the person must be transported and treated with great care, an attempt being made to discover what is the disease or injury which, alone or combined with intoxication, has produced the condition in which he has been found. *Such a person should never be made to walk to a station house or be confined alone*, or be permitted to escape the vigilance of those who take charge of him, till they can rest the responsibility of his fate on others better instructed or in authority over them.

The treatment suitable for all cases when there is doubt as to the cause of unconsciousness is to secure quiet and rest, the body being laid upon the back, with the head a little raised. If there be great paleness and a cold surface, with slow, sighing breathing—the signs of prostration—smelling salts or hartshorn may be held under the nose, hot tea or coffee given and heat applied to the body. If there be great heat of the surface, cold may be applied to the body and head and cold drinks given.

With these general remarks on the way to decide between simple intoxication and other causes of loss of consciousness, let us now consider separately the way in which doubtful cases should be managed, and several common forms of fits or seizures.

Fainting is too familiar to need much detail of symptoms. It is due to a temporary weakening or pause in the heart's action, causing a diminution

or suspension of the circulation of blood in the brain, and a consequent loss of consciousness. This is accompanied with a loss of muscular power, so that the individual, if standing, falls. The pallor of fainting is very well known, and is simply a signal of the like bloodlessness which obtains in the brain itself. Usually no treatment is demanded in fainting, for a wise provision of Nature puts the person who faints in the best position for recovery, that is, lying down. But if in any way this is prevented from happening of itself, it should be brought about by a bystander. A fainting person must be laid out flat at once. The head must be put as low as, or lower than, the body, so that the heart may not have to work against the law of gravitation in sending blood to the brain. Sprinkling water upon the face and holding smelling salts to the nose tend to excite the nerves of sensation, and rouse the brain and heart to renewed activity. So they are useful. Nothing else is usually necessary; though if a person is very slow in coming to, it may be well to apply heat to the pit of the stomach. But of all, the first, the indispensable thing, is to lay the fainting person down flat. Nothing should be allowed to interfere with this.

Hysterics—not hysteria, for that is usually a tedious and inscrutable nervous disease—but fits of hysterics, marked by prolonged and uncontrollable laughing or crying, are best treated by the exercise of calmness

and patience on the part of the bystanders, sometimes by taking no notice of the attack, or by leaving the unfortunate sufferer in a room by herself or himself—for men are at times subject to this curious disorder. Heroic measures, like dashing water into the face, are not to be generally recommended. Good is sometimes done by giving valerian or Hoffman's anodyne, if it can be gotten.

In Epileptic Fits the sufferer usually has a warning sensation, and often starts up to leave the place he is in. There is in the attack a pallor of the face, a peculiar cry, a loss of consciousness, a moment of rigidity, and then the face becomes congested and violent convulsions come on. In these there is usually some foaming at the mouth, the eyes roll or are turned up, and often the tongue or lips are bitten.

Epileptic fits are to be treated very much like fainting fits, because in them also the brain is temporarily bloodless. At the same time any movements calculated to injure the person must be controlled. There is no use in struggling against such as will do no injury; they had better be simply regulated, and no attempt made to entirely prevent them; but a folded towel or a piece of soft wood may be—if it can be—thrust between the teeth, to prevent the usual biting of the tongue. When the height of the convulsion is passed, rest, quiet, and perhaps a moderate stimulation may be secured. Here again the flat position of the body must be obtained.

I remember, one summer, at the seashore, to have seen some ill-advised, though kind-hearted, persons walking a boy up and down the beach during an epileptic attack, because, from his pallid face, they thought he was suffering from the cold; and they were much astonished at the rapidity with which he regained consciousness when laid out flat on the sand.

It would be a good plan if every one who is subject to epileptic attacks had his or her name and address placed just inside the coat, or in some place where it could be seen at once when the clothing is loosened to give relief, as is almost invariably done when such attacks occur. Epileptics should not, except when it is absolutely unavoidable, go about alone, or go into crowded places. They have no right, on their own account and for the sake of others, to incur the risks involved in such conduct, except under the stress of necessity.

Convulsions of Children and Infants are generally (in the absence of brain disease) due to some irritation of the digestive apparatus or to teething. They are usually preceded by some other evidence of irritation, such as restlessness and fretfulness. When they come on, there is a loss of consciousness and spasms. These may affect the whole body at once, or only a half, or only one limb at a time. The eyeballs sometimes roll about, or they squint, or they are turned far up so that only the lower part of them can be seen.

When convulsions occur, the child should have cold applied to the head and heat to the body. It often seems to do good to plunge it into a tub of hot water to which some mustard has been added.

A large injection of hot soap suds should also be given, to clear the bowels out, and if an emetic can be given it may be done, in the hope of removing some cause of trouble from the stomach.

Apoplexy consists of the rupture of a blood vessel in the brain, and is marked by a slow pulse, a greater or less, sudden loss of consciousness, stupor, heavy, snoring breathing, and usually a deeply flushed face. The pupils are generally dilated. Paralysis may be observed at once, or it may follow. Usually it is limited to one side, and may be detected by observing that one side of the face is drawn up, while the other looks flabby, and the corner of the mouth on that side hangs down a little.

For this condition, rest and cold to the head constitute the best treatment until medical advice, which is indispensable, can be obtained. If this cannot be had for some time, the bowels should be emptied, if possible, with an injection of hot water and soap, and a purgative given by the mouth as soon as it can be swallowed.

Intoxication sometimes closely resembles apoplexy, and should be treated in the same way until its identity can be safely established. For this the odor of the breath is a useful guide, though it

may be due to a stimulant, given by a bystander after an accident, or taken just before one. In addition, it may be remembered that, in a case of deep drunkenness there is no paralysis, though there is helplessness equally on both sides; that the person can be aroused from the stupor, and that generally if the eyeball be touched he will attempt to close the eyelids. In such a case an emetic should be given, and, if any hartshorn or aromatic spirits of ammonia is at hand, a teaspoonful of this in a teacupful of water. A large draught of vinegar will often go a great way toward sobering an intoxicated person. If there is much evidence of prostration, with cold, clammy skin, heat will have to be applied to the body, to prevent collapse.

Emetics are sometimes of value in cases of profound intoxication, but it must be borne in mind that, if a mistake be made—as has been—and the trouble be an apoplexy, no more dangerous thing could be done than to give an emetic.

Catalepsy is a very rare state, resembling death. It affords time enough for summoning a doctor, and this is the only sensible thing to do under these circumstances.

Injuries to the Brain.

Concussion of the Brain, or stunning, may be caused by blows or falls on the head, or even by falls upon the feet. In such cases there is sickness, sometimes fainting, with paleness and depression. There is also usually confusion of ideas, and the sufferer cannot talk continuously and coherently. There may even be unconsciousness.

The proper treatment for this condition is to lay the sufferer out flat on the back, loosen any clothing that binds his neck or waist, and secure quiet and plenty of fresh air. If the skin becomes cold and clammy, heat should be applied to the body and limbs. No whisky or brandy should be given, except by a doctor's order.

Compression of the Brain. This is caused by the pressure of broken bone upon the brain after a fracture of the skull, or by the pressure of blood poured out in a hemorrhage inside of the skull. The symptoms are loss of consciousness, sometimes paralysis, sometimes twitching of the muscles, or even convulsions, and usually heavy snoring breathing, with wide dilation of one or both pupils. The treatment is the same as for apoplexy. (See p. 32.)

Effects of Heat.

Burns or Scalds are usually dangerous in proportion to their extent and depth. Those which involve as much as half the surface of the skin are almost necessarily fatal.

The treatment of burns may be divided under two heads. The first is for the moment of the accident. When clothes are on fire the wearer must not run about, but lie down and be covered with a rug, or blanket, or carpet, or shawl, or coat—anything which will exclude the air and smother the flame. If, in fright, the sufferer lose presence of mind, some bystander must take the responsibility of throwing her (for these accidents usually happen to women, on account of the character of their clothing) down and enveloping her with some thick cover.

After an extensive burn or scald, so much of the clothing as has to be removed must be clipped away, so as not to burst blisters that have formed. These may be punctured at one edge and their contents allowed to run out, and the elevated cuticle, or outer skin, to fall down upon the deeper layer. Then a dressing of pure sweet oil, or castor oil, is to be applied on strips of soft old linen, and disturbed

as little as possible afterward. It is customary in hospitals to clip away the clothing and envelop the patient in lint soaked in "Carron oil" (which is a mixture of equal parts of linseed oil and lime water), and to administer stimulants and anodynes. In case of a person severely and extensively burned the entire body may be immersed in a bath, which shall be kept, as long as necessary, at a temperature of 100°. When the shock of a burn is great some stimulant should be given, and laudanum, in twenty-drop doses to an adult, and half as much to a child, to allay the suffering. Of course, medical advice will be taken in such grave circumstances.

Slight Burns or Scalds are best treated by applying a cloth soaked in a strong solution of baking soda—the bicarbonate, in the proportion of a heaping tablespoonful in a teacupful of water, or it may be powdered on without using any water. This usually allays the pain more effectually than anything else that is known. Carron oil is a good application for such burns. So is the white of egg, and in an emergency damp earth might be used, or white lead paint. Anything may be used which will prevent friction and exclude the air; but nothing should be used which will stick in cakes and prevent after-examination, or make this very painful. For this reason flour and cotton batting, though often recommended, had better not be used. For small burns simple cold water is better in every way than

these. Indeed, for any but the most extensive burns it is one of the best remedies. An arm or a leg can be immersed in it and left there a long while with great advantage.

Burns with acids must be deluged with water and then treated like other burns.

Burns with caustic alkalies should be treated by an application of vinegar, followed by applications of oil.

Burns with hot pitch. After such burns the pitch often sticks. In such a case it ought not to be removed, but let alone.

Sunburn, and the burns caused by external applications, like mustard, may be treated very successfully with the baking soda. This may also be mixed with vaseline, or cosmoline, or lard from which the salt has been boiled out, in equal parts, and used as an ointment.

Sunstroke, or more properly **Heatstroke,** is not even usually due to the direct rays of the sun, but rather to a prolonged elevation of the bodily temperature, oftenest while working, and especially in confined places. When it takes place in the open air it is apt to be on oppressive, heavy, or murky days. It is generally preceded for some time by pain in the head and a sense of oppression. The attack, however, culminates in a loss of consciousness, with heavy, labored breathing, and an intense, burning, dry heat of the skin. The absence of

perspiration in the presence of so great heat is one of the most characteristic symptoms of heatstroke.

When it occurs the thing to be done is to lower the temperature. As much of the clothing as possible must be removed, cold must be applied to the head and body, and ice may be rubbed over the chest and placed in the armpits.

Pouring, or dashing, cold water over the body is not to be advised, as it conveys a needless shock to the system; but there is nothing better than to place the body in a cold bath, or to wrap it in sheets kept wet and cold by renewed applications of cold water or ice. After a while consciousness will return. Then the cold may be discontinued, and renewed only if the surface becomes again very hot—that is, hot in contrast to that of a well person, not in contrast to the ice or water that has been used—or in case consciousness should be lost again.

It must always be remembered that sunstroke, or heatstroke, is a very dangerous thing, and may be followed by grave and permanent impairment of the intellect.

Heat exhaustion. This is a condition of great depression of the system due to the action of heat, and, occurring in hot weather, it might be confounded with sunstroke or heatstroke. But in heat exhaustion, instead of a hot, dry skin, there is a cold, moist one. This calls for rest, fresh air, a cool apartment; but no application of cold to the surface. Small doses

of brandy, thoroughly diluted, may be given, and the system gradually brought back from its depression.

Lightning Stroke. This is marked by evidences of shock, with reduction of the force of the circulation, weak pulse and slow, sighing breathing. It must be treated with rest and stimulants, and warmth applied to the body.

Effects of Cold.

Freezing sometimes takes place in so insidious a way that the sufferer is not aware of it till great damage has been done. Toes are perhaps oftenest frozen or frost-bitten. This results partly from the practice of wearing tight and insufficient coverings on the feet. When it occurs, it is best treated by gradually bringing the temperature up to that which is normal—about 98° Fahrenheit—and maintaining it there. Warm baths, gentle friction, and afterward covering with a thick, hot poultice, is the best thing that can be done until medical help can be obtained. This is important in such cases, because not infrequently gangrene follows the freezing of the feet, making it necessary to amputate parts of them. Frozen fingers, ears, or noses are of less frequent occurrence, but must be treated on the same principles.

If the whole body has been exposed to extreme cold, there will follow a depression which requires the most cautious treatment. To restore its warmth is the first demand, and for this a warm bath, made gradually warmer until as hot as can be well borne, surrounding with heated blankets, or exposure before

an open fire may be used.* At the same time stimulants may be given internally, such as hot tea and coffee, with the addition of small quantities of spirits.

* This recommendation is contrary to popular belief and contrary to what is taught in most text-books. But it has been proved to be correct, by experiments made in Russia, where it was found that the best way to resuscitate dogs which had been frozen, was to put them at once into a hot bath. Of twenty animals treated by the "gradual" method in a cold room, fourteen died; of twenty introduced at once into a warm room, eight died; of twenty placed immediately in a hot bath, *all recovered*.

Sprains.

Sprains of the finger or wrist usually require cold and moist applications. In the latter, the hand and forearm should be laid on a straight splint, and lightly secured to it with a soft bandage or broad strips of sticking plaster. One of these should go round the hand and one or two round the forearm above the wrist—not over it. Sprains must be treated by rest, and heat or cold, whichever gives the most comfort.

Sprains of the ankle should never be treated lightly. In them there is not infrequently a little fracture of the inner surface of one of the leg bones that form the ankle joint. This complication gives rise to so much trouble, and requires such skillful and patient treatment, that it has come to be believed that it is better to have a broken leg than a sprained ankle. The general principle, however, in the case of a sprained ankle is, first to put the joint at complete rest, then to allay inflammation, if it arises, and afterward to promote the absorption of inflammatory products. For the first, a splint and bandage are usually necessary; for the second, friction, kneading of the joint, at times careful motion of it, and the use of moist heat. But in few cases is it truer that "he who doctors himself has a fool for a patient."

Dislocations.

Dislocations consist of the displacement of the articular or joint end of a bone. They cannot occur (except when the same joint has been out of place before) without the tearing of ligaments whose function it is to keep the joint close. They can be detected by the occurrence of pain and stiffness of the joint. There is also deformity, which can generally be made apparent by comparing the injured joint with the corresponding sound one of the other side.

Dislocation of the fingers can usually be reduced—or put in place—by strong pulling, aided by a little pressure upon the parts of the bones nearest the joint. They must be retained in place with a splint and bandage, or sticking plaster. Dislocations of the thumb are, even for surgeons, sometimes almost impossible to put in place.

Dislocation of the lower jaw may be treated by almost any one. This is fortunate, since it is a very awkward dislocation, and very trying to the patient. It may occur at any time and under the most unexpected circumstances.

To reduce a dislocation of this sort, the sides of the jaw must be seized between the thumb and fingers of each hand, with the thumbs resting on

the teeth and the fingers below the jaw, and firm pressure be made, first downward and then backward. It must be remembered to cover the thumbs with several thicknesses of cloth, and as soon as the jaw starts into place, to slip them off to the outer side of the teeth, inside the cheeks, or the releaser will be rewarded by having his thumbs mashed between the upper and nether millstones. He must be quick as lightning, too, for the muscles do not wait, when they have been so unnaturally on the stretch, but bring the lower teeth against the upper like a hammer.

There is still another form of dislocation of the jaw, in which this is just a little open and cannot be opened any wider or closed. The thing to do in such a case is to slip a strong spoon handle or table knife in between the teeth and pry the jaw wider open. This will make the bone slip back into its place.

Dislocation of the shoulder, that is of the upper arm bone from its socket, may be reduced by laying the patient down, sitting alongside of and facing him, and placing the nearest heel (with the boot or shoe removed) in the arm pit of the injured side, and then drawing down the dislocated arm and dragging it over toward the sound side. This will usually pry the head of the bone outward and upward into its place. If it does not succeed readily, the amateur surgeon had better let it alone. If it

does succeed, the bone will go in with a snap. The arm should then be bound to the side, with the fore-arm carried across the chest and the hand placed on the opposite shoulder.

Dislocations of other joints ought not to be tampered with at all. The best that can be done is to put the parts in the position easiest to the sufferer, surround the joint with cold, wet cloths, to which laudanum has been added, and send for a surgeon. The risk of doing injury by injudicious efforts to set a joint is greater than that of waiting till a surgeon can be summoned.

Fractures—Broken Bones.

Broken bones may be recognized by the occurrence of pain, by deformity, by bending when they ought not to bend, by a sound and feeling of grating at the point of fracture. There are two important divisions of fractures. Simple fractures, where there is no other injury besides the break, and compound fractures, where the bone cuts through the skin and there is an opening from the exterior to the seat of fracture. The latter are far more serious and dangerous than the former.

Broken bones call for treatment as various as they themselves are. Most of them require special appliances, known only to surgeons, and no attempt should be made by any one who has not surgical training to do more than treat a fracture temporarily. However, until a surgeon can be gotten, the following suggestions may be adopted, as far as the circumstances will permit.

Fracture of the upper arm. In this the elbow should be drawn down and placed against the side of the chest, with a layer of cloth between. Then the whole upper arm should be bound securely to the body and the hand carried in a sling raised a little higher than the elbow.

Fracture of the forearm. In this the arm should be bent at the elbow, and placed in as nearly a natural position as possible, with the thumb uppermost. Then a broad, well-padded splint should be placed along the back of the forearm and hand, going all the way to the tips of the fingers, and another along the front. These should be bound on pretty firmly, and the hand carried in a sling and raised a little higher than the elbow.

Fracture of the finger. A broken finger should be straightened out and bound to a light splint reaching from the wrist to the tip of the finger.

Fracture of the thigh bone. In this fracture the thigh must be bent up toward the abdomen and the lower leg back toward the thigh, so as to relax all the muscles. Then one splint can be applied to the outer side of the thigh and one to the inner, and bound to it. The sufferer should then have both legs tied together, and lie on a firm bed, in this ⧾ shaped position, with the broken limb uppermost.

Fracture of the kneepan. In this the whole leg must be bound to a straight splint placed at the back of the limb and going from the hip to the heel. A folded towel, or other small pad, should be placed in the hollow at the bend of the knee, so that the leg may not be held absolutely straight—which position soon becomes very painful.

Fracture of the leg below the knee. In this the leg should be drawn down and placed in a natural position, using the sound leg for comparison. Then a pillow should be placed under it. Under this broad bandages should be passed and tied together over the limb, so as to draw the sides of the pillow pretty firmly up against it. (See Fig. 3.)

FIG. 3.

In fracture near or at a joint it is best to bend the joint a little, and lay the limb flat on a pillow, keeping it cool and moist. These breaks are especially grave, and demand the best skill that can be obtained.

Fracture of bones that lie deep in the body, like the hip bone or the shoulder blade, are very hard to detect, and can be treated only by placing the sufferer in a comfortable position and securing rest and coolness till a surgeon comes.

Fractures of the ribs must be treated in the same way. It is a good plan, however, to put on the

side of the chest, where the break is, long strips of sticking plaster, about an inch and a half wide, placed parallel to the ribs, beginning at the lowest part of the chest and going up, each strip being made to overlap the one below about half its width. The strips should extend from the spinal column to the middle of the breast bone. This makes the chest wall more rigid and prevents the rubbing together of the broken ends of the bone. (See Fig. 4.)

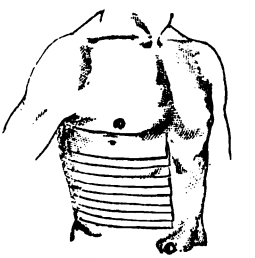


FIG. 4.

In fracture of the collar-bone the patient should be laid on his back, on a hard, flat, hair mattress, or on a settee, with a folded blanket under him (never on feathers), without any pillow, and kept so until the surgeon comes. This is one of the best ways to treat a broken collar-bone until it is quite healed.

FIG. 5.

In fracture of the jaw, close the mouth and put a bandage round, so as to keep the two rows of teeth against each other. (See Fig. 5.)

In fracture of the skull there is nothing the non-medical can do better than putting the patient at rest, lying down, and placing cold, wet cloths to the head.

Fractures of the spinal column (broken back) are very hard to detect, but if one be suspected the patient must be moved as little as possible. He had best be laid out upon his back, and, if possible, not be disturbed till the surgeon directs it. Turning such a patient over upon his face is dangerous, and must not be permitted.

Compound fractures, as has been remarked, are those in which there is an open wound communicating with the broken ends of the bone. They are to be treated, in an emergency, like simple fractures in the same locations, with the additional precaution that they must be thoroughly cleansed and kept clean, and the greatest care exercised to keep the sharp edges of the bone from doing any further damage.

In all fractures cold water should be applied to the surface, so as to prevent, as far as possible, the swelling which usually comes on soon after a fracture, and which often interferes very much with the examination of the surgeon.

There is nothing in which there is a greater call for ingenuity and fertility of resource than in extemporizing splints for broken bones. Pasteboard, leather, shingles, pieces of cigar box—anything

fairly smooth and stiff, may be used. A surgeon at the seashore got himself no little credit once by setting a broken arm on the beach, folding up and using as a splint a large newspaper which he had been reading. When a leg is broken, the other one will make a good temporary splint, or a coat-sleeve, stuffed with grass or hay, may prove serviceable.

Wounds.

In studying wounds we will adopt the classification customary in works on surgery, viz., contusions, contused, lacerated, punctured, poisoned, incised and gunshot wounds.

Contusions are what are usually known as bruises, and almost all wounds of the soft tissues caused by blows. They are sometimes very painful, and often followed by discoloration, due to the escape of blood under the skin from the small vessels of a part. A black eye is a familiar example of this sort of an injury.

They are sometimes very simple, as in the illustration just given. Such contusions are best treated at first, when painful, by the application of cold, wet cloths. Pure laudanum is often a very acceptable application. Later, when the pain has subsided, hot, wet cloths are best, as they favor the carrying off of the blood that has escaped.

Contusions of the chest or abdomen may be very serious, for beside the external bruises, important internal organs may be injured. Evidence of this may be seen in spitting of blood or vomiting it, or passing it from the bowels or from the bladder; or

there may be great depression. In such cases little can be done by the non-professional person beyond securing complete rest and sustaining the strength of the sufferer by means of warmth applied externally and careful stimulation internally, as described in speaking of Shock—to which reference may be made.

Contused Wounds. These are cuts or tears accompanied with bruising of the tissues. They are to be treated like lacerated wounds. Unless they bleed freely warm applications are better suited to such wounds than are cold ones.

Incised wounds, or clean cuts, if simple and small, call only for a piece of sticking plaster, and perhaps a bandage. If large, the edges should be brought as near together as possible, and supported so by sticking plaster, or bandages, or the hands, till the coming of the surgeon. If an entire part be cut off, as an ear, or a nose, or a toe, or a finger, it should be cleaned with lukewarm water, and put in its place, leaving to the surgeon the decision whether it be worth while to try to save it. Some very remarkable cases of reunion of such parts are on record, and an attempt to save them is not to be lightly rejected.

Cuts of the walls of the abdomen are often followed by escape of a portion of the bowels. These, if dirty, should be cleansed, and a gentle effort made to restore them to their place. If this fails they should be covered with a clean white cloth, soaked

in warm water and kept warm and wet by a gentle stream of water, or by laying on it a sponge soaked in warm water, which should be constantly renewed.

Cuts of the chest wall may be followed by escape of a portion of lung. This should be treated in the way just described for escaped bowel.

Cut throat wounds usually require, in addition to the ordinary treatment of the wound, that the head shall be bent forward, with the chin close to the breast bone, and kept there.

The way to wash delicate structures, such as the intestines, or raw cut or torn surfaces, may be described here—and it is a good plan to learn to do such things by practicing them before the emergency arises. Dip a sponge in water, and hold it in the closed hand, with the thumb uppermost, and a corner of the sponge hanging below the fist. Now, on squeezing it regularly, a single stream of water will flow softly and steadily down from it. The size of this stream can be regulated by the way the sponge is squeezed, the force by the height to which it is raised. This is the only way of cleaning off delicate tissues that is safe in the hands of the unexpert.

Lacerated wounds are tears with ragged edges, such as are often caused by machinery, bricks, clubs, timbers, stones, dull tools, glass, hooks, etc. These always require surgical skill. Till it can be obtained, however, the torn parts can be placed in as nearly

their natural position as possible (after removing, with a stream of lukewarm water, squeezed from a sponge, any foreign matters that can be so gotten rid of) and covered with a cool, wet cloth, or a cloth soaked in laudanum, or alcohol. If the tear has been very great, and the sufferer is depressed and cold, tablespoonful doses of brandy or whisky may be administered, and a cloth wrung out of hot water placed over the injured parts.

Punctured wounds are made with sharp-pointed objects, like arrows, pins, needles, tacks, fish-hooks, glass, thorns or splinters. Of these

Pin wounds rarely do much harm.

If a needle is run into the flesh and comes out, always see that it is all there; and if any part, from point to eye, is missing, call a surgeon. Meanwhile keep the wounded part perfectly still, and make no attempt to remove what remains. This would probably be quite in vain, and would only increase the difficulty of the surgeon's work when he arrives. The broken needle should be carefully kept and shown to him, as he will then know better what to look for in his examination.

A fish hook is a troublesome thing to get in one. If this should happen, the best thing to do is to cut off the string, push the point of the hook through, and draw it out, like a needle in sewing. If it can be done, the broad part of the hook may be cut off before trying this. But this is not easy for the operator or the patient.

Thorns rarely do much harm unless they are poisonous, and wounds of this sort we shall consider later.

Splinters are dangerous in proportion to their size and the part they enter. Small splinters may be picked out with a needle.

Splinters under the nails sometimes defy attempts at removal by the non-medical. But the way to succeed is to scrape the nail as thin as possible over the splinter, then split it or cut a little tongue out and remove the splinter. Often when, after this, the splinter cannot be removed, it will yet come away of itself when matter forms; and in any case the sufferer will be much better off for submitting to this little operation.

Splinters of glass are quite beyond most people's skill. They are best treated with cold, wet applications, and left otherwise entirely to the surgeon.

Splinters in the eye should be pulled out, if possible. If not, the eyelid had better be gently closed, both eyes covered with a layer of cotton soaked in cold water, and a bandage placed round the head, so as to keep the lids as still as possible. This bandage should not be too thick or put on too tight, and the application should be kept cold, with ice, if need be.

If a large splinter enters the body, an attempt may be made to pull it out; but a surgeon should

be called without fail, and whatever of the splinter has been extracted carefully saved and shown to him. This will aid him in making up his mind whether the removal has been complete, and perhaps save much pain and danger to the patient.

Poisoned wounds may be considered here, as they are usually punctured, and result from the bites or stings of animals or insects.

The bites of venomous serpents usually demand the prompt removal of the part bitten. It may be cut out instantly by any one who has the nerve to do it. Before this, perhaps, the part should be encircled, above the wound, with a tight ligature, and, if small enough, thrust into the mouth and sucked hard, so as to extract the poison. The immediate application to the wound of hartshorn is of advantage; and a knitting-needle, or nail, heated to redness, may be thrust into it. At the same time, whisky should be given, in doses large enough to cause drunkenness, and the intoxication kept up till medical aid can be secured.

The stings of tarantulas, scorpions, centipedes, etc., are to be treated with cold, and hartshorn applied to the point where the sting entered.

The stings of insects are rarely dangerous to life. They may be treated with cold, wet applications—wet earth is a very good one. The application of a drop of hartshorn or wet salt often gives great relief.

The bites of cats and rats are sometimes followed by severe inflammation; but the first treatment should be simply cleansing the bites, sucking them, perhaps, and applying cold to them for a time.

The bites of dogs are a terror to many people, while others have little fear and are very seldom bitten. Dogs seem to learn who do not fear them. If any one be bitten by a dog in good health, only the simplest treatment will be necessary. If the dog be sick, local inflammation, or severe constitutional disturbance may follow. In case of reasonable suspicion, the same course should be adopted as for bites of venomous snakes. Of course, too, sound medical advice will be taken.

It is a foolish thing to kill a dog that has bitten anybody, soon after this has taken place. Such a dog should be caught and kept under the observation of some person of unquestioned carefulness, intelligence and special information. The too speedy slaughter of a dog has robbed many a sufferer of the assurance that would have been gained by seeing it living and well, and sent many a one to the grave, as dying of hydrophobia, who never had it, but had been bitten by a healthy and harmless animal.

Again, if one has been bitten, and there be a reasonable suspicion that the dog was "mad," let him not despair. Some of the most able and careful

(that is the greatest matter) medical men are of the opinion that a great many cases of so-called hydrophobia have been spurious; that is, they were not hydrophobia at all. For myself, the more I have studied this subject the more convinced have I become that very few of the cases reported have really had hydrophobia; but that the most have been alarmed by what they thought, and frightened by what injudicious friends or timid doctors have said and done, until they died of sheer terror. So, in case of a bite from a supposed mad dog, let the things suggested above be done; then let quiet be secured, and the very best medical man in the place sent for. It is a very serious matter, and calls for the clearest head and most extensive information. Whoever gets flurried and shows alarm at such times is scarcely less dangerous than the dog that did the biting. Then let no one breathe "hydrophobia," or talk about what has happened. By this the chances of escape will be increased.

This much is said, not to ventilate a theory, but with the belief that acting upon it will not increase the number of bites, while it may decrease the number of deaths from what is called "hydrophobia."

Gunshot wounds. This is another class of injuries occasionally met in civil life, though not common. Ordinarily little can be done for them, except by a surgeon; and perhaps all that is advisable

before he comes is to note and remember the position of the body or the wounded part at the moment it was struck, and the direction from which the missile came, so that these facts may help the surgeon in his search for it.* Then cold wet cloths, upon which laudanum may be poured, should be kept upon the wound, to prevent, as far as possible, inflammatory swelling; and if, as is very often the case, the patient be in what surgeons call a state of shock—that is, cold and depressed—stimulating doses of wine, whisky or brandy should be given, and heat applied to the surface of the body. If a part is badly shattered, the local treatment should be the same, except that, if there be much depression, cold had better not be used at all. There is rarely much bleeding from gunshot wounds, except when large vessels are divided. In such a case the bleeding may be controlled as described under the head of hemorrhage.

* To show how strange may be the course of a bullet, I will cite a case that I treated in 1876. A young man was shot with a pistol. The ball passed through his lower lip, struck an upper front tooth, which it broke off, then glanced downward and backward, diagonally through the tongue, and finally buried itself in the floor of the mouth, on the other side from that where it entered the lip.

Railroad and Machinery Accidents.

Railroad and machinery accidents may be the occasion of simple incised, contused or lacerated wounds, or, as is very common, of severe tears, wrenching off of fingers or toes or limbs, or of crushes. Saws, planing machines, cog-wheels, belts, and many other machines or parts of machines, cut or tear off many a limb or part of one. Such injuries almost always occur when no medical aid can be obtained for some time, and it would be well if some one on every train and in every room or place where machinery is in motion could have some idea of what can be done, and what cannot, before a doctor can be had.

Trifling injuries, whether cuts or tears, are to be treated on the principles already described in speaking of incised or lacerated wounds: that is, the parts are to be cleaned as gently and as well as possible, by letting lukewarm water run over them. Then, any displaced tissue—skin or flesh—may be put in place, and a clean, white cloth, soaked in laudanum or alcohol or water, laid upon the wound,

and bound on loosely with an extemporized bandage.

Hemorrhage is not usually severe after railroad and machinery accidents, because the wounds are generally inflicted in a way which closes up the blood vessels as they are torn or twisted off.

Large tears, or lacerations, must be treated by carefully removing any fragments of clothing, or dirt or splinters of any sort, and washing with lukewarm water. For removing foreign matters, the best forceps are in everybody's possession. They are a finger and thumb; and no one need be afraid to use them with reasonable care. They may be aided occasionally by touches with a clean linen or muslin cloth, or a clean sponge; but these must be undoubtedly clean.

After cleansing is complete, the torn parts must be put in position, and kept so by bandages, sticking plaster, or the hands of another person, as may seem best. Sometimes a splint is required. This is usually easy to prepare in a mill or on a railroad. It may be clumsy—that is not of much consequence—but it ought to be sufficiently large to keep not only the injured part still, but, in case of a limb, the joint above and the joint below the injury.

Such injuries are often accompanied with comparatively little pain. If, however, there should be severe pain, laudanum may be given—about thirty drops to an adult. Cold or hot cloths—whichever

are most comforting—must be applied to the injury.

When fingers or toes are crushed they ought to be washed, modeled into good shape, dressed with a piece of soft white cloth, wrung out of hot or cold water, and laid upon a small splint.

If a finger or toe hangs by a mere shred, snip it off entirely. Because, although such fingers and toes have been saved, such a result is almost miraculous, and the cost, in time and trouble and money, is more than a finger is worth to a workingman, and indeed to almost anybody.

When fingers or toes are torn off the stumps almost invariably require a scientific amputation. But, until this can be decided upon, they must be cleansed, and treated with a cool, wet application of some sort, and then not meddled with.

Hands or feet that have been crushed must be treated by being wrapped up in some soft warm dressing, like cloth, or cotton, or wool. Cold is only to be used if there be profuse bleeding. The injured part must invariably be supported with some sort of a splint and placed about on a level with the body. One who has received such an injury ought to be made to lie down, unless some other course is absolutely necessary for moving him, or is authorized by a surgeon. Such injuries rarely cause much pain, but they almost invariably cause great depression. This must be met by keeping the sufferer warm with

wraps and hot cans or bricks, or bottles, and giving him, every few minutes, a *small quantity* of whisky or brandy (a teaspoonful) in a little hot water. Larger doses of spirits are not needed. (See Shock.)

When hands or feet have been torn off or cut off with wheels, the stumps are to be treated as described, and the limb placed in such a position that the injured point is higher than any other. These injuries are usually accompanied with depression also, and this is to be combated in the manner just described.

Crush of the arms or legs is to be treated like crush of the hands or feet. But here the prostration is usually much greater and the need for support, with warmth and stimulants, more urgent. The clothing should on no account be disturbed, except in so far as it can be cut away and replaced with warm coverings.

Crushes of the chest are sometimes instantly fatal, and almost always cause death in a short time. In such cases, as well as in case of

Crushes of the lower part of the body, there is nothing that can be done beside securing rest, warmth and moderate stimulation. The sufferer should be made as comfortable as possible, and prepared for the almost inevitable issue.

Shock is a condition which has been alluded to already, in speaking of certain injuries. It may also be caused by fright, as, for example, that which

may accompany a trifling gunshot wound. Or it may be caused by a blow upon the pit of the stomach, or by a sudden and severe pain, or even by drinking a large quantity of ice-cold water. It is very common after gunshot wounds, and almost invariable after serious railroad or machinery or mining accidents.

The signs of shock are: great paleness, a cold, clammy skin, a very feeble pulse and feeble breathing, a pinched face, dull eyes, drooping eyelids, dilated pupils, bewilderment or dullness of mind, or even insensibility. A person in such a state may die very soon, and will surely die before long, unless he can be brought out of the shock. This requires prompt, energetic and persistent effort on the part of those who come to his assistance. Heat must be applied, if possible, to the whole body, and especially to the region of the heart and pit of the stomach. This can be done with a hot bath, a hot fire, hot cans, hot bottles, stove plates, heated blankets—in fact, anything hot that can be got hold of. At the same time hot drinks, to which brandy or whisky has been added, may be given in small and frequently repeated quantities. To be more exact, a teaspoonful of brandy or whisky in a tablespoonful of hot water may be given every ten minutes for several hours.

Manufactories, mines and railways ought to be furnished with appliances for the treatment of this

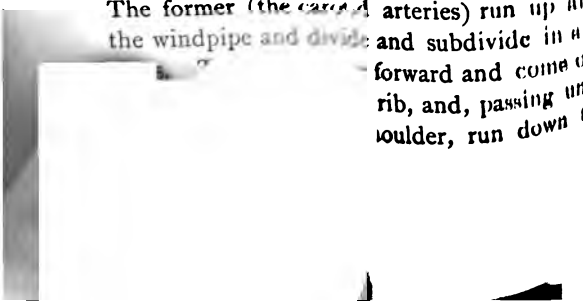
[illegible] and some one who knows how to use them. For shock almost always follows severe accidents occurring to their employees, and is the most common cause of death after them, as any hospital surgeon could testify.

Hemorrhage—Bleeding.

There is no accident so appalling as hemorrhage, whether the bleeding comes from an external wound or from the rupture of blood vessels in some internal organ. There is none which calls for so much nerve in combating it, nor any in which a little accurate knowledge can be more valuable.

The subject of the control of hemorrhage will be better understood after taking a concise view of the anatomy of the organs of circulation. This cannot be made absolutely accurate without being too technical, but the variations from accuracy will not affect its practical utility. (See Frontispiece.)

The blood starts from the left side of the heart, and is driven first into the aorta, which curves over above the heart and descends along the left side of the spinal column, within the chest and abdomen. From what is called the arch, at the beginning, are given off the vessels which supply the head and arms. The former (the carotid arteries) run up alongside the windpipe and divide and subdivide in all direc-



forward and come out from
rib, and, passing under the
oulder, run down through

the armpit and inside of the arm to the middle of the front of the elbow, and here divide into two branches. One of these passes along the front of the forearm, on the thumb side, and the other along the little finger side. Thus, in the upper arm the arteries follow nearly the same line as the seam in a coat-sleeve. The two arteries of the forearm, entering the palm of the hand, join in a loop, from which vessels run down, one on each side of each finger, and one on the inner face of the thumb.

The aorta, as it descends through the chest and abdomen, gives off vessels to supply the internal organs, and near the lower end of the backbone divides and sends two large vessels out through the groin into the thigh. Each of these runs down in almost a straight line, between the muscles, to the middle of the hollow at the back of the knee. Just below this it divides into three branches. The first of these passes through to the front, between the two bones of the lower leg, and runs down under the muscle, close to the outer side of the shin bone, and passes out upon the instep at about the middle of the front of the ankle joint. Here it breaks up into smaller vessels that supply the top of the foot.

The second and third branches of the main artery of the thigh pass down the back of the lower leg, one on each side, close to the corresponding bone, and deep under the muscles. One passes back of the inner ankle bone into the inner side and sole of the

foot. The other passes back of the outer ankle bone, to the outer side and sole of the foot. The arteries of the sole of the foot, like those of the palm of the hand, unite to form a loop, from which a vessel is given off for each side of each toe.

This is a brief outline of the course of the arteries. As they divide and subdivide, like the branches of a tree, they become correspondingly smaller, and they end in an inexpressibly fine network of minute vessels. These are called capillaries. Then, as the capillaries are a sort of splitting up of the smallest arteries, so, on the other hand, by the confluence of a number of capillaries, larger trunks result, toward which the current of blood constantly sets, and the beginnings of the veins are formed. These unite in a manner the very reverse of the branching of the arteries, and, growing, like rivers, larger and larger by repeated junctions of several into one, travel back to the heart in an opposite direction to, but alongside of, the arteries. Thus each principal artery has at its side at least one important vein. Up the legs, up the inside of the abdomen and chest, up the arms and down the neck they pass, till they unite to form one trunk, which empties into the right side of the heart.

From this point the blood is pumped into the lungs to be aerated; from the lungs it is collected and emptied into the left side of the heart; and from the left side, as we have seen, it is pumped

out to begin the circuit through which we have just traced it.

The diagram in the frontispiece will give a fair idea of the course of the main blood vessels, and will make clearer what may not have been understood from the preceding description.

It will be observed that the course of the blood vessels is always in the safest part of the body or limb. They all lie where they are protected by bending a limb or a joint—a natural act when attacked. They are on the inner side of the arm and forearm, when these are used for attack or defence. They are on the inner side of the thigh and at the back part of the leg—out of harm's way. In endeavoring, as shall hereafter be recommended, to check bleeding by pressing upon a main blood vessel, this fact may serve as a reminder of the course it might be expected to run. To which this suggestion may be added, namely: When you are in doubt, feel for the pulsation of the artery and make pressure where you feel it beating. Another point, preliminary to considering the methods of arresting hemorrhage, is that blood from arteries is usually bright red and escapes in jets, while blood from veins is dark red or purple, and flows in a steady stream. Blood from capillaries is of a color between these two, and it oozes out.

Capillary hemorrhage follows every cut. The color of the blood is red; the flow is generally slow

and not very considerable. It usually stops of itself. If it does not, the part may be elevated and cold water or ice or snow, or even vinegar, applied. If there is oozing from a large raw surface, a towel may be folded, dipped in water as hot as the hand can bear, lightly squeezed, so as not to drip, and laid upon the bleeding surface. This may have to be renewed once or twice, at intervals of a few minutes, but it usually acts like magic in this form of hemorrhage.

Hemorrhage from the veins is also generally slow and steady in its flow, the blood being of a darker color than in other forms. It, too, is rarely of consequence or demanding special effort to control it. When severe, the application of cold, and firm continuous pressure upon and below the wound, generally suffice to stop it. Rupture of *varicose veins* in the leg may lead to dangerous hemorrhage, but this can usually be checked by applying a dry pad of cloth and binding it firmly down upon the bleeding spot.

A wound of the jugular vein, on the side of the neck, may also be followed by dangerous hemorrhage. This is also to be treated with a pad and pressure, which can be best made with a finger laid above and one below the wound.

Hemorrhage from the arteries is very dangerous. Here the blood is bright red, and spurts in a stream or leaps in jets from the divided vessel. If

it be from a large artery, such as lie in the root of the neck or the armpit, or the inside of the thigh near the groin, life will usually be quickly lost. Indeed, without a thorough acquaintance with anatomy, it is hardly likely that any advice that could be given here would be available in such cases. The only thing to suggest is to thrust a finger deep into the wound and see if firm pressure there will stop the bleeding. Or some other form of plug may be tried. The chances of success are, however, very slight.

But every one may, while awaiting skilled aid, do something when the arteries of the limbs are cut. The first duty in all such cases is to be cool as possible, then, as quick as is consistent with coolness. The principle that must guide every attempt to stop the bleeding is to obstruct the artery at the spot, or between the centre of the body and where it is cut; for this is the direction in which the blood flows.

For wounds high up in the arm, strong pressure may be made downward, behind the collar bone, about at its middle (see Fig. 7.) The thumb, or the handle of a large door key, well wrapped, so as to make a tolerably thick mass, can be thrust down, and if it does not seem to strike the artery the first time, it can be moved along, toward the breast bone and toward the shoulder, to see if it will hit the right place.

For wounds of arteries of the finger, pressure may be made on the side, by seizing it between the thumb and finger and pinching it, or by wrapping a cord round, or slipping on a rubber band.

For wounds of arteries of the hand, raising this above the head and making firm pressure on the bleeding spot, or with *both* thumbs just above and in front of the wrist, will usually stop the bleeding. Or the wound may be packed with lint, or cotton, or old muslin, or linen, and bound firmly with a bandage. If this fail, resort must be had to the measures recommended for the next form of hemorrhage.

For wounds below the elbow, first grasp the upper part of the arm with both hands and squeeze as hard as possible; then let some one make a thick, hard knot, as big as an egg, in the middle of a handkerchief, place it over the middle of the front of the arm, immediately above the elbow, tie the ends tight at the back, and bend the forearm up so as to press hard against the knot (Fig. 6). This, if successfully done, will obstruct the main blood vessel (the brachial artery), which in this place lies in the middle line of the bend of the elbow,

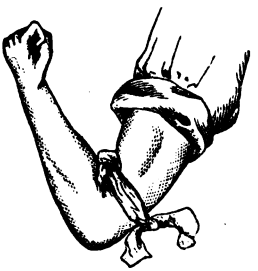


FIG. 6.

For wounds in the upper arm, pressure may be made against the bone on the inner side and just below the swelling muscle, which most people are aware is called the biceps, as shown in Fig. 7. A knot as big as a fist may be made in any piece of cloth and shoved hard up into the armpit, and the elbow then brought straight down and held or bound firmly against the side of the chest.

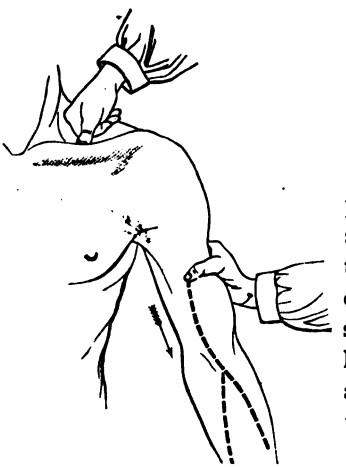


FIG. 7.

If either of these methods fail, or cannot be carried out, the "Spanish-windlass" may be used. To do this, place some hard, round body, like a stone, in the large part of a handkerchief folded diagonally, and carry the ends of this round the limb, so as to leave the lump over the position of the artery—that is, over the bend of the elbow, or a little in front of the middle of the inside of the arm, near the shoulder. Then tie the ends of the handkerchief so as to make a loose loop, slip a stick through this and twist it round and round, so as to tighten

the handkerchief, till the blood stops flowing. This is a much rougher procedure than the method described before, but one cannot be over-particular in such cases; so if the former fails, or no bystander is cool enough to carry it out, no time must be lost before the "Spanish-windlass" is used.

Wounds of arteries of the foot or leg may be treated by firm pressure in the hollow just behind the knee (above the calf of the leg). This can be effected by placing there a knotted cloth, like that suggested for the armpit, and doubling the leg back until it presses hard against it. In doing this, the thigh must be doubled up toward the abdomen or the bending of the knee will soon become intolerably painful.

For wounds in the thigh, pressure must be made in the hollow immediately below the groin, about two-thirds of the way from the hip bone to the middle line of the body, where the artery of the thigh (femoral artery) comes out of the body, as shown in Fig. 8.

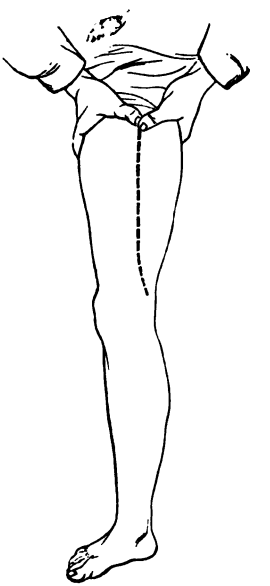


FIG. 8.

This can be effected with the thumbs or with a rounded stick, or a key handle, or with a "Spanish windlass." The artery may also be closed by placing in the groin a knotted cloth, or a huge round stone, and doubling the leg back on the thigh (this is important), and the thigh forward, hard against the abdomen. If this latter plan does not succeed promptly some other one of those mentioned should be tried, and no time be lost in doing it.

Bleeding from arteries of the scalp can be controlled by firm pressure upon and around the bleeding point.

Recapitulation.—To go over this briefly again; Remember: first, to keep cool; second, that the principal object is to obstruct the artery above the cut; and that this can be effected by pressure, in the several cases, in front of the bend of the elbow, in the armpit, behind the bend of the knee, or just below the groin. This can be made with the fingers, or with a knot, held hard against the artery by a tight bandage or by bending the limb up against it—or, in case of the arm, by pressing it hard against the chest. In case of failure, the "Spanish windlass" is to be applied to the same places.

In case none of the plans proposed can be carried out, a cut that bleeds profusely may be stuffed with a rag or dry earth, and this kept in place by pressure, with a bandage or handkerchief, or the cut part may be forcibly compressed in any way, or a finger thrust

into the wound and held wherever it seems to do most good.

Finally, let it be remembered that fainting may put an end to hemorrhage, yet when consciousness is restored this may recur. So this possibility should not be overlooked. The treatment of a faint under these circumstances is the same as that of any faint, in addition to the measures demanded to check the bleeding.

Special Hemorrhages.

Bleeding from the nose is often only Nature's way of getting rid of an excess of blood, but it may be so profuse as to threaten life. If this be the case, of course, medical aid will be summoned; but until it arrives the best thing that can be done is to snuff salt and water or vinegar up the nose. A strong solution of alum in warm water is also useful; but vinegar is less disagreeable, and will rarely fail to check the bleeding, unless the case is beyond any except skilled help.

In hemorrhage from the lungs the blood is bright red and generally frothy. It is rarely profuse, and yet, as it is usually coughed up and caught in a handkerchief, it seems to be so. The amount can never be safely estimated in this way. The best treatment is rest in bed, with the body raised in the sitting posture, and the swallowing of lumps of ice. The application of cold to the chest, if the patient is not too weak, is of some use, and salt and vinegar can be given in teaspoonful doses every fifteen minutes.

In hemorrhage from the stomach the blood is usually very dark, looking like coffee grounds.

If it is mixed with any other contents of the stomach, its appearance may be masked. In such cases ice water or broken ice may be swallowed, and teaspoonful doses of vinegar. Rest in bed must, and the application of cold to the stomach may, be employed.

Hemorrhage from the bowels may be treated with ice-water injections and the application of ice to the abdomen.

In internal hemorrhage ice-cold cloths may be placed upon the abdomen. Rest in bed, without a pillow, and *with the head lower than the body*, must also be secured.

Transportation of Injured Persons.

If injured persons have to be moved from one place to another, it is worth while to know how to do it with the greatest ease and safety to them. If a door, or shutter, or settee is at hand, any of these will make a good litter, with a blanket, or shawls, or coats for pillows. In lifting a person upon a stretcher it should be laid with its foot at his head, so that both are in the same straight line. Then one or two persons should stand on each side of him, and, raising him from the ground, slip him up on the stretcher. This can be done smoothly and gently, whereas, if a stretcher is laid alongside of an injured person, some of those who lift him will have to step backwards over it, and in doing so are very apt to stumble. If a limb is crushed or broken it may be laid upon a pillow, with bandages tied round the whole, so as to keep it from slipping about (see page 48). Where an injured person can walk, he can get much help by putting his arms over the shoulders and round the necks of two others. In case of an injury where walking is impossible and

lying down is not absolutely necessary, an injured person may be seated on a chair and carried, or he may sit upon a board or fence rail, the ends of which are carried by two men, around whose necks he should place his arms, so as to steady himself; or two men may carry him seated on their interlocked hands, in the way known to children as "Lady to

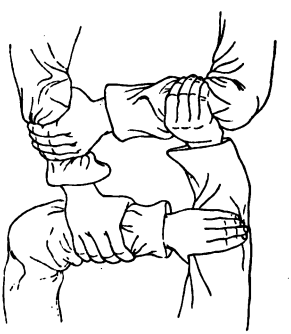


FIG. 9.

FIG. 10.

London." To do this, each of two persons, standing face to face, should grasp his right forearm with his left hand (its back uppermost), then he should grasp his companion's free left forearm with his own free right hand (also with its back uppermost), as shown in Fig. 9. When no litter can be gotten, the body may be supported by a man on each side, with

their arms placed behind his chest and under his hips. In carrying an injured person upon a litter,

FIG. 11.

or what serves for one, the bearers ought not to keep step; but when they are not using a litter, they should keep step.

Poisons.

Immediately upon the discovery or suspicion of poisoning, some one should be dispatched for a doctor, if possible, carrying information as to the poison taken, so that valuable time may be saved. Meanwhile the following may be done :—

1. **Unknown Poisons.** If the patient should vomit, this should be encouraged; if not, it must be provoked. The simplest way to do this is to give large draughts of lukewarm water, and thrust a finger down the throat. If there be time, and it is at hand, a teaspoonful or two of ground mustard may be stirred up in the water, or a teaspoonful of powdered ipecac, or a tablespoonful of the syrup of ipecac. Further, let it be remembered that there is no occasion for fastidiousness. Any water will do. Water in which hands—or dishes, for that matter—have been washed, may, by its very repulsiveness, act more quickly than anything else; and if soap has been used, it will be all the better for that, as soap is an antidote for acid poisons. The quantity used must be large; the sufferer must be urged to drink and drink, a pint at a time, until he can contain no

more, and has been made to vomit over and over again.

After copious vomiting, soothing liquids should be given—oil, milk, beaten-up raw eggs—all in moderately large quantities. These are especially valuable when the poison has been of an irritating character.

If the sufferer be much depressed in body or mind, the hands and feet cold, the lips blue, the face pale, a cold perspiration upon the forehead and about the mouth, then some stimulant may be administered. Strong, hot tea, without milk, is the best, because it is a chemical antidote to many poisons. Strong coffee is next in value. To either of these can be added brandy, whisky, wine, or alcohol, in table-spoonful doses for an adult, and half as much for a child; or the spirits may be mixed with a little hot water. Warm coverings are not to be forgotten; and if the depression be great, hot water cans or hot bricks, wrapped in one or two thicknesses of blanket, should be laid by the side of the chest, or a huge poultice placed round the body, or a blanket, wrung out of hot water and covered with a dry one.

2. Acid Poisons. Oil of vitriol (sulphuric acid) and nitric and muriatic acids are heavy, sometimes yellowish-looking, fluids; the first, as its name implies, not unlike oil in appearance, but very heavy in a bottle. The others are lighter, and give off extremely pungent, irritating fumes. All discolor

anything on which they fall; the first blackens pine wood, the others turn it yellow. All burn horribly, and leave no doubt of their caustic nature.

For these the proper treatment is to give an alkali. A tablespoonful of hartshorn may be mixed with two teacupfuls of water, and given; or almost unlimited quantities of soda, magnesia, potash, whitewash, chalk, tooth powder, whiting, plaster, soap, or even wood ashes, stirred up in water.

After this should come the provoking of vomiting; then the bland fluids mentioned above should be administered, rest secured and stimulation employed, if necessary.

Oxalic acid comes in small, heavy, bright, colorless crystals, making a clear rattle in a bottle or jar. For this the best antidote is lime in some form. If lime water is at hand, it may be given freely, or whitewash, tooth powder, chalk, whiting, or plaster from a wall. The latter may be crushed and stirred up in water, without regard to the grittiness, which will not do any harm.

Carbolic acid is usually in solution, as a thick, clear and dusky fluid. When taken by the mouth it causes whitening and shriveling of the mucous membrane lining it, with intense burning and then numbness. There are also nausea, weakness and depression, sometimes actual collapse. It is a very dangerous poison, because it acts rapidly and benumbs the stomach, so that it is hard to provoke

vomiting. This must be attempted, however, and large draughts of oil or milk given. Rest, warmth of the body and stimulation must also be secured.

3. Alkaline Poisons. *The strong alkalies* are *ammonia*, or hartshorn—which is a clear fluid with an unmistakable odor—*potash* and *soda*, usually dissolved, and sometimes in the form of lye. Liniments sometimes contain these substances, and are swallowed by mistake.

The alkalies usually burn intensely. They must be combated with an acid. Vinegar can always be had, and there is nothing better. It should be given undiluted, and a pint at a time, if possible. Lemon juice may be used, or even orange juice, though the latter is too mild an acid to be of much service, unless the oranges are very sour. Vomiting should then be provoked, and followed by bland acid or oily drinks, rest and stimulation, if necessary.

4. Metallic Poisons. Arsenic, sugar of lead, corrosive sublimate and tartar emetic are not infrequently taken by mistake, because they are used for various household purposes.

Arsenic comes as a white, sweetish powder, often used to destroy domestic pests, such as rats and roaches. It usually excites vomiting and violent pain in the stomach. At once large quantities of milk, white of egg, or flour and water, or oil and lime water must be given. The vomiting must be encouraged or provoked, and dialysed iron given.

This can now be obtained at any drug store, and should be given freely, in tablespoonful doses, each dose being followed at once by a teaspoonful of common salt in a teacupful of water; or, if this is not at hand, equal parts of sulphate of iron (green vitriol) and of carbonate of soda may be dissolved in separate cups of hot water and then mixed and drunk. Afterward vomiting should be again provoked, followed by a dose of castor oil.

Paris green is an arsenical preparation. If taken as a poison, it must be treated like simple arsenic.

Sugar of lead comes in white lumps or powder, and calls for vomiting, Epsom salts, milk, eggs, and castor oil.

Corrosive sublimate comes in small, colorless crystals, or in a clear solution. If taken, vomiting must be provoked, and some form of tannic acid given. Tea is the handiest thing containing this, and its administration should be followed up with eggs and milk.

Tartar emetic, a white powder, is best treated in the same way.

Phosphorus is sometimes chewed off of matches by children. It is a poison which acts slowly, and affords ample time for securing medical advice. But five-grain doses of sulphate of copper, dissolved in water, may be given, at intervals of ten minutes, until vomiting comes on. Then a dose of magnesia should be administered; but no oil.

Lunar caustic is sometimes swallowed. The antidote of this is a very strong brine of salt and water, given again and again; and vomiting should be provoked, until the vomited matters cease to have a look like thin milk.

Iodine, in the form of a tincture, is also sometimes swallowed by mistake. The antidote for this is starch and water.

5. Vegetable Poisons. The vegetable poisons are so often taken in consequence of mistakes in the use of medicines, that it is a wise precaution that a poisonous drug should always be contained in a bottle of peculiar shape, or with something peculiar attached to its neck, and that there should also be a special place in each house where dangerous remedies, and such as are intended only for external use, should be kept.

Opium preparations are *opium*, *morphine*, *laudanum*, *paregoric*, *black drop* and many poisonous nostrums sold as soothing-syrups, pain-destroyers, and drops for infants. Their symptoms are deep sleep, with narrowing of the pupil of the eye to a small circle, which does not enlarge in the dark. Here emetics must be used promptly and persistently, and vomiting produced over and over again. Strong coffee must be freely given as a stimulant. So long as the breathing does not fall below ten to the minute, there is no *immediate* danger of death; but opium is a treacherous poison, and

requires all the skill that can be obtained to combat it. The important matter is to keep up the breathing. The custom of walking a patient up and down and slapping him with wet towels is to be deprecated, because it adds exhaustion to stupor. If an electrical battery can be obtained, and used, it is the best thing that can be done. The next is to lay the patient upon a lounge and slap his skin with the back of a broad brush or with a slipper. This is all the rousing that is necessary, so long as the breathing keeps above ten to the minute. Should it fall below this, or if the breathing should cease, artificial respiration should be employed. (See pages 12–14.)

Chloral is a damp, colorless, crystalline substance, usually seen in solution. Its symptoms and treatment are the same as those of opium.

Strychnine is an intensely bitter, white powder. It produces stiffness of the jaws, then of the limbs and body. It should be treated by provoking vomiting, giving a purge, and doses of thirty grains of bromide of potash, or twenty grains of chloral, or both, to an adult. The greatest quiet must be secured. The poisoned person should be put to bed in a darkened room, with doors, windows and shutters arranged in a way that shall exclude all sights, sounds and draughts, though permitting good ventilation.

Aconite is sometimes contained in liniments, and

swallowed by mistake. In such a case vomiting must be brought on, and followed by the administration of stimulants. Strong coffee may be used, hartshorn (a teaspoonful in a teacupful of water), wine, whisky, or brandy. The patient will often feel a peculiar numbness or tingling in the arms or legs, which is an evidence that the poison has entered the blood, and makes the attention of a physician imperative. If there is depression, warmth should be used, as described when speaking of unknown poisons.

Hemlock, deadly nightshade, the **Jamestown** (or **jimson**) **weed, monkshood, and toadstools** are sometimes eaten, without knowledge of their poisonous character. **Tobacco,** too, sometimes causes poisonous effects. All produce deep depression, and must be treated with vomiting, followed by stimulation and warmth, very much as in the case of aconite poisoning.

Alcoholic liquors are sometimes taken in such large quantities as to be poisonous. When this is the case there are evidences of deep stupor or depression. The course to be pursued is to cause vomiting, give hartshorn and water (a teaspoonful in a teacupful), and keep the body warm. (See page 32. *Intoxication.*)

6. Decayed meats or vegetables usually excite vomiting, which should be encouraged till the stomach is empty, and followed by a dose of castor oil and some powdered charcoal.

Resumé. We have now completed the list of poisons that are at all common, and have seen what should be done in almost any case that is likely to occur. In conclusion, let it be remembered that, when there is an alarm of poisoning, some *one*, at least, *must keep cool*; then that a physician is to be summoned (sending him word, if possible, what poison has been taken); and that, until his arrival, the course indicated above should be followed. To save time in an emergency, the following table may be consulted, which gives the name of each poison we have already studied, and the proper treatment for it.

POISON.	TREATMENT.
Unknown	Provoke repeated vomiting; Give bland liquids; Stimulate, if necessary.
Acids— Sulphuric, Nitric, Muriatic, Oxalic,	Give an alkali; Provoke vomiting; Give bland fluids; Secure rest; Stimulate, if necessary.
Alkalies— Hartshorn, Soda, Potash, Lye,	Give an acid (vinegar); Provoke vomiting; Give bland liquids; Secure rest; Stimulate, if necessary.
Arsenic— Paris green, Scheele's green,	Provoke vomiting; Give dialysed iron and salt; } repeat several times; Give dose of castor oil; Secure rest; Stimulate, if necessary.
Sugar of Lead	Give Epsom salts, Provoke vomiting, } repeat several times; Give bland liquids; Give dose of castor oil.
Corrosive Sublimate, *Tartar Emetic*,	Provoke vomiting, Give strong tea, without milk, Give raw eggs and milk; } repeat several times; Give dose of castor oil; Stimulate, if necessary.

Phosphorus	Provoke vomiting; Give five-grain doses sulphate of copper; Give dose of magnesia: but *no* oil.
Lunar Caustic (nitrate of silver),	Give strong salt and water, rep't many times. Provoke vomiting,
Iodine	Provoke vomiting; Give starch and water; Give bland fluids.
Opium— Morphine, Laudanum, Paregoric, etc., *Chloral*,	Provoke vomiting, repeatedly; Give strong coffee, without milk; Keep up the breathing.
Strychnine	Provoke vomiting, once or twice; Give a purgative; Secure absolute quiet.
Aconite	Provoke vomiting; Stimulate well.
Jamestown Weed, *Hemlock*, *Nightshade* (belladonna), *Toadstools*, *Tobacco*,	Provoke vomiting; Stimulate well.
Alcohol	Provoke vomiting; Give hartshorn and water.
Decayed Meat or Vegetables	Provoke vomiting; Give a purgative; Give powdered charcoal.

To provoke vomiting, warm water may be used with or without ground mustard (a tablespoonful to a pint of water), or ipecac (a teaspoonful of the powder or a tablespoonful or so of the syrup), and thrusting a finger down the throat. It is best to give large quantities (that is, a pint at a time) of warm water whenever vomiting is to be excited.

Bland liquids are milk, raw eggs, some sort of oil, gruel, etc.

Stimulants are tea, coffee, whisky, wine, etc., or hartshorn and water. Of this a teaspoonful in a teacupful of water will be enough for a dose. In making tea or coffee one must not wait to do it as if

for the table, but mix hot water and the leaves or grounds, squeeze them well, stir together, and give the whole—leaves, grounds, everything. At the same time some may be made regularly, if there are conveniences for it.

Alkaline antidotes are hartshorn and water (a tablespoonful in two teacupfuls of water) soap and water, lime, whiting, soda, chalk, tooth powder, plaster, magnesia, whitewash, and even wood ashes.

Acid antidotes are vinegar and lemon juice.

In giving an antidote never wait for it to dissolve. Just stir it up in any fluid at hand except oil, and have it swallowed immediately.

Domestic Emergencies.

No less important than the emergencies thus far considered, most of which have a sort of public significance, are a few more which usually occur within the limits of the household and try the knowledge and patience of anxious parents. If these emergencies arose only when skilled assistance could be had in a moment, they might, perhaps, be omitted from a book like this. But they have a way of presenting themselves at the dead of night, in traveling, at the seashore, or in the mountains, where doctors are not known or not to be had promptly, and those upon whom the burden of meeting them falls may not be sorry to have some simple suggestions as to what they may do until they can commit their interests to others better prepared to guard them.

Cholera morbus produces vomiting and purging and violent cramps in the stomach. The pain may be so severe as to actually threaten life. There is then a pinched expression of the face, and a cool, clammy skin. In such cases, something must be done at once to relieve the pain. For this, laudanum may be given—half a teaspoonful to an adult, or ten drops to a child over twelve years old. At the same time

heat must be applied to the stomach. For this purpose a mustard plaster can be used, or cloths wrung out of hot water and sprinkled with turpentine or with red pepper. An injection containing a small teacupful of warm water or milk, to which a tablespoonful of tincture of assafœtida has been added, often gives great relief.

Colic causes violent griping pain in the abdomen. It is usually due to something indigestible which has been eaten. It should be treated by hot applications to the abdomen, a purgative by the mouth and an injection of water and assafœtida, as already described.

Vomiting or nausea, due to something objectionable in the stomach, may be treated by giving large draughts of pretty hot water. If it be due to nervousness or a slight indigestion, it can usually be corrected by swallowing small pieces of ice, or tablespoonful doses of lime water, or a pinch of soda, or thirty drops of aromatic spirits of ammonia in a half teacupful of water, together with the application to the pit of the stomach of a mustard plaster, or of a flannel cloth wrung out of hot water and sprinkled with a tablespoonful of turpentine or some red pepper. A lump of ice held against the pit of the stomach often does much good. The sufferer should always lie down until the nausea passes off.

Diarrhœa is usually due to a cold or to something indigestible which has been eaten. In either case it

is an effort of nature to cure itself of something hurtful. So, at the start, the best thing to be done is to give a mild purge. A small dose of equal parts of sweet oil and castor oil, or spiced syrup of rhubarb or magnesia is the best. After this, if the movements of the bowels soon return, half a teaspoonful of ginger in a wineglass full of water may be given after every passage. If this does not check the diarrhœa, ten drops of laudanum may be given to an adult after each passage. For an adult, also, an injection, made of half a small teacupful of boiled starch to which twenty or thirty drops of laudanum have been added, often gives immediate relief. For a child over two years old one drop of laudanum may be given after each passage, until the diarrhœa seems checked or there is some evidence of drowsiness.

Croup. Attacks of spasmodic croup, though very alarming, are rarely dangerous. When they occur the little sufferer should be given an emetic of a teaspoonful of syrup of ipecac or a heaping teaspoonful of powdered alum, followed by a draught of warm water. Cloths wrung out of water as hot as can be borne should be wrapped round the throat and laid upon the chest. They should then be covered with something to keep the heat in—like oiled silk or a dry cloth.

This is all that can ordinarily be done with advantage till a physician arrives. But it usually gives decided relief. In this case, and even if it does not,

natural anxiety should not drive parents to be wanting to do something else all the time. They may renew the hot cloths as soon as they begin to grow cold, but beside this there is nothing to be done but to wait until there has been time for the spasm to pass off. This is hard to do, it is true; but it is the best thing to be done, and far better than the fuss and worry, to parents and child, of trying a variety of methods.

In Whooping Cough there is a strong nervous element, and a spasm of coughing is often brought on by the example of another child. So, when a child is seized with a fit of coughing it ought, if possible, to be at once separated from other children, for its own good and for theirs. Then, if the fit does not pass away in the usual time, it may sometimes be cut short by pressing a lump of ice against the chest, or by placing hot cloths there.

Asthmatic attacks may be treated in several ways. One method is founded upon the fact that asthma is a nervous manifestation, which grows worse, the more the attention is directed to it. If the attention can be diverted the attack will often pass off. Occurring, as it usually does, at night, the darkness, the surprise, the absence of surrounding activities, increase its effects. If the sufferer be a man, and will get out of bed, put on his gown and slippers, light his gas and take a book or paper and begin to read, he will, in many cases, soon find his

trouble diminishing and finally disappearing. If he be a smoker, his cigar or pipe will help him in this emergency.

A less agreeable method is to take an emetic. Another is to smoke the asthma cigarettes sold in every drug store. Another is to get some steaming hot water in a basin, pour into it a tablespoonful or more of Hoffman's anodyne, and breathe the ascending vapors. One of the best remedies is a full dose of opium in some form—for an adult, thirty drops of laudanum, or two teaspoonfuls of paregoric. As soon as this takes effect the spasm of asthma will disappear.

Nervous attacks, which may take the form of shivering fits, are to be treated by putting the patient to bed, if possible, and giving strong hot coffee, or hot sweetened water, and by applying heat to the body by a bath or hot cloths or bottles, with a mild mustard plaster or turpentine placed on the pit of the stomach. A teaspoonful of camphor water, of valerian, or of Hoffman's anodyne, will often prove of great service.

Toothache, depending upon a cavity in a decayed tooth, is usually very easy to stop. To do this a fine crochet needle should have a very small bit of clean cotton twisted round its point, and with this the hole in the tooth should be thoroughly swabbed out. Then the point of the crochet needle should be cleaned and another little ball of cotton,

like a very small shot, be dipped in oil of cloves and caught up with the end of the needle. It should then be laid in the hollow tooth and poked in, and rammed and packed down hard with the end of the needle. This rarely fails to cure such a toothache.

When toothache is not due to a hollow tooth, a somewhat severe but usually efficient plan of treatment is to lay between the gum and the cheek a little wad of cotton, the size of the end of the thumb, soaked in spirits of camphor. This makes a sort of blister, but generally cures the toothache, which is much harder to bear.

Earache should always suggest an examination of the teeth, and if one be found decayed, it must be extracted or at least cleaned out and packed with cotton and oil of cloves, as described in speaking of toothache. For, many earaches depend upon diseased teeth.

In case this is not called for, or does no good, a folded cloth, wrung out of hot water, with a teaspoonful of laudanum poured over it, or a big, hot poultice—for which hops is the best material—should be applied to the side of the head and kept as hot as possible. Hot drinks should be given also, and enough laudanum to cause relief from pain.

The occurrence of an earache should always lead to consulting a doctor, for it is often of importance as a sign of disease which may seriously affect the hearing.

Poisoning by the common poison vine causes red blotches, and wheals, and blisters on the skin, with great burning and itching. It is best treated by applying cloths soaked in a solution of soda, a tablespoonful to a teacupful of hot water. Dusting with magnesia or ordinary toilet powder is also grateful.

Signs of Death.

In the absence of a physician it sometimes becomes important that others shall be able to determine whether death has taken place or not. The occurrence of death can be recognized by the following signs: The breathing and pulse cease, the surface becomes pale, the muscles relax, the lower jaw falls a little, the "sight" of the eye becomes dull and glazed, the upper lid falls so as to partly cover the eyeball, then the whole body gradually cools to the temperature of the surrounding air and becomes rigid, while later decomposition sets in, and usually shows itself first by a greenish discoloration of the surface of the abdomen.

But it does not require the detection of all these signs to determine that death has taken place. The cessation of breathing and of the heartbeat is a safe basis to an opinion. It requires some care, however, to decide that there is no breathing or circulation. To test the former, a cold piece of polished steel—like a razor blade or table-knife—can be held under the nose and before the mouth. If no moisture condenses upon it, it is safe to say there is no breathing. To test the cessation of the heartbeat, it is not

enough to feel for the pulse at the wrist. The largest blood vessel in the body (see Frontispiece) runs directly down from the heart, along the left side of the spinal column, and its strong beating can be plainly felt in most people by pressing the finger tips firmly down toward the backbone, at the point below the breast bone called the "pit of the stomach." In this place the slightest pulsation of the heart can be felt if the walls of the abdomen permit the finger to get near the backbone, and here examination should be made before deciding that the heart has ceased to beat. Another test is listening over the region of the heart, in front of the left side of the chest. An acute ear can always detect the movement of the heart by sounds made by its valves, which, when perfect, sound like the syllables "ub-dup," "ub-dup," and so on. If careful listening fails to detect the heart sounds, and the cold metal fails to show any evidence of breathing, the individual may certainly be said to be dead.

When, in addition to these signs, paleness, muscular relaxation, a glazing eye, increasing coldness and rigidity come on, it hardly requires the onset of decomposition—the infallible sign—to prove, beyond any possibility of doubt, that death has occurred.

The electrical battery may be used in doubtful cases. Electricity distinguishes with absolute certainty between life and death. For two or three hours after the stoppage of the heart the whole of the

muscles of the body have completely lost their electric excitability. When stimulated by electricity they no longer contract. If, then, when electricity is applied to the muscles of the face, limbs, or trunk, after supposed death, there be no contraction, death has occurred. No faint, no trance, no coma, however deep, can prevent the manifestation of electric muscular contractility.

But ordinarily it is very easy to decide between death and life; and the fear of being buried alive, which torments many people, is altogether without good foundation. The stories upon which it rests are such as an excited imagination might easily invent, and natural fear propagate, but they do not bear critical investigation. In certain European cities, for many years, the bodies of hundreds of thousands of those supposed to be dead have been placed in rooms where ingenious appliances and careful watching have been used to detect the slightest evidence of life, and in not a single case has a mistake been found to have been made.

Supplies for Emergencies.

The suggestions in the preceding pages have been, as far as practicable, such as could be carried out without having made any special provision for them. Nevertheless, occasionally appliances and remedies have been suggested, which would very much facilitate the treatment, if they were accessible. These may be divided into medical and surgical. They may be arranged separately or together, but the former arrangement would probably best suit individual necessities.

SURGICAL CASE.

A surgical case suitable for almost any emergency should not contain so many things as to confuse one who has not a medical education. Its supplies should be few and simple, such as—

1. Some absorbent cotton.
2. A roll of old muslin or linen.
3. Bandages, 2½ inches wide and 6 yards long, rolled up.
4. Rubber adhesive plaster, in strips 3 inches wide, and not less than a yard long.
5. Scissors.

6. Pins.

7. Needles, threaded with stout thread.

8. A bottle of hartshorn, with a glass or rubber stopper.

9. A bottle of laudanum, with dose marked on it.

10. A bottle of good whisky or brandy.

USE OF THE CONTENTS OF THE SURGICAL CASE.

1. **Absorbent cotton** can be obtained at any drug store. It is perfectly clean and soft, and is prepared in such a way that it—instead of resisting moisture, as ordinary cotton does—will absorb it with great rapidity. Thus it will take up discharges from wounds; and when a cool or hot application is desired, it can be soaked with cool or hot water. Sometimes it is very convenient to put it on dry and then squeeze the water upon some part of it from a sponge, when every part will rapidly become saturated.

For padding splints, or making cushions to prevent pressure of any kind, there is nothing so good as absorbent cotton.

2. **Old muslin** or linen can be torn into any shape or size that may be required, and can be used to spread poultices upon. It is also useful to make broad slings of.

3. **Bandages** of the kind described are used to keep applications in place, to secure parts to splints,

and to prevent injurious motion. The simplest way to apply them is to make circular turns around any part. When the latter is of even size this is a very easy matter. Where the part is larger at one end than the other, the ordinary circular turns would not fit smoothly. To accomplish this the rule is to begin at the small end and make a few turns, round and round, one immediately over the other, and then to begin to move up the limb spirally. So long as a turn can be made to smoothly overlap the one before it about one-third, this spiral is all that is required. But as soon as it puckers the bandage is not carried on as before, but is turned down, so that the inner face now looks out, and the bandage, instead of

FIG. 12.

passing up, passes downward, so as to make a sort of inverted V—so, Λ. On now carrying the bandage on round the part, it will be found that it comes

to the front, just overlapping the preceding turn, and the same process can be repeated, until the whole bandage is neatly applied. (See Fig. 12.)

At joints, like the ankle, knee, and elbow, the bandage may make a sort of figure of 8, the middle or crossing part being in the bend of the joint, and the two loops, one above and one below it.

Bandages should never be put on so tight as to cause pain, and never drawn tighter above than below.

Bandages may be fastened by pins, by stitching, by strips of adhesive plaster, or by splitting the end and carrying one tail on as before and turning the other back to meet it and then tying the two together. For narrow bandages, the latter is the simplest plan; for wide ones some one of the others is better.

The width of 2½ inches is that which is oftenest convenient. When a narrower bandage is called for —as for a finger—one of the former may be torn down the middle; or, if rolled up, it can be laid on a firm surface and the whole roller cut in half with a sharp knife, just as one would cut a sausage. This quickly and easily makes two good finger bandages.

4. **Rubber adhesive plaster** is better than any other kind, because it can be applied without heat or moisture. It sticks of itself. When applied to a hairy part, the hair should be shaved off, if possible. If not, when the plaster comes to be removed, it must be soaked off, or it will pull the hair out and cause great pain.

Another point to be remembered is that, in changing adhesive plaster dressings only so much should be removed as is necessary or as cleanliness demands. The rest may be left on and the new dressing applied up to it or over it. In the end all can be soaked off together.

The plaster is most convenient to use when in strips, which can be cut easily and without waste if needed smaller, and additional strips applied side by side, if a greater width is wanted.

5, 6, 7. **The use of scissors, pins and needles** need not be explained.

The points of pins should never be left sticking out, and care should be used to avoid sticking either pins or needles through a patient's skin.

8. **Hartshorn** is to be used as a stimulant to the heart and to the nervous system. A teaspoonful may be put into a tumblerful of water and a teaspoonful of the mixture given every few minutes. Its use by the nose everybody is familiar with. Yet it may be worth while to say that a full bottle of hartshorn should never be brought near to a patient's face. The stopper may be wetted and held under the nose, or a few drops put on a handkerchief, or the hand, and used in the same way.

9. **The laudanum bottle** should be marked "Poison!" and have the dose marked on the label. In surgical cases, where there is much pain, a full dose is called for, and to give less is to trifle with the sufferer.

As already remarked, laudanum is one of the very best local applications to wounds and bruises. It can be used by soaking a proper quantity of absorbent cotton, or a piece of old muslin, and laying it upon the injured part.

10. **About the whisky,** it may be remarked, that a large dose is almost invariably useless or injurious. Even for an adult—unless a confirmed drinker—the proper dose is a teaspoonful in a small quantity of hot water—or cold water, if hot cannot be had—repeated every few minutes until some effect is produced, or a couple of ounces—about half a small teacupful—have been given.

HOW TO MAKE POULTICES.

Poultices. The commonest materials for poultices are bread, flaxseed, hops and mush. A hop poultice is made by pouring hot water upon hops till they are well moistened. A bread poultice is made by soaking the inside of bread in hot water or milk, and mashing it quite soft and even. With flaxseed or corn-meal the way is to put the poultice material on a plate, and add just enough hot water to moisten it. This is worked in with a large spoon or table-knife, just as a salad dressing is made. Then to this thick but damp mass, enough hot water is gradually added and worked in until the whole is almost soft enough to run, but not quite. Poultices should be spread thick. To spread a poultice, a piece of

fine old muslin (or a piece of open-meshed stuff, such as cheese cloth is made of, can be used), twice as long as the poultice is to be, is laid on a flat surface, and one-half of it spread smooth with the poultice material. The other half is to be brought over and pressed down on top of the poultice material, or another piece of muslin, or a piece of tarletan can be used for this purpose, so that the poultice material shall not come into immediate contact with the skin; then, when it comes to be removed, it will come off easily, all at one time, and not leave any behind to stick to the skin.

A poultice must be put on hot. To secure this, it may be spread over a hot plate. A simpler plan, however, is to take the finished poultice up by its edges and lay it for a moment or two on something hot, or dip it into a vessel containing boiling water. Care must, however, be taken not to put on a poultice so hot as to burn.

To keep a poultice warm when applied, it should be covered with oiled silk or several folds of bandage.

It may be remarked that nothing has been said here about the use of "lead water and laudanum" or arnica, so often recommended for bruises and cuts. The reason for this omission lies in the fact that neither has any merit superior to that of cold water or laudanum. When a part is hot and angry, there is nothing better for it than the use of cold

water, constantly renewed until the heat and irritation have subsided. When pain is to be combated, laudanum alone is the best thing to use locally.

MEDICINE CHEST.

A small box can be bought, or made, to hold a few things likely to be useful in accidents or sudden sickness. It ought to contain—

- Absorbent cotton.
- Sticking plaster—Rubber plaster is best, because it requires neither heat nor moisture for its application.
- Bandages of muslin or flannel.
- Thread and needles.
- Pins.
- Vaseline.

1. Aromatic spirits of Ammonia.
2. Tincture of Assafœtida.
3. Oil of Cloves.
4. Hoffman's Anodyne.
5. Syrup of Ipecac.
6. Laudanum.
7. Magnesia.
8. Mustard.
9. Paregoric.
10. Spiced Syrup of Rhubarb.
11. Turpentine.

To these may be added, if quite convenient, camphor water, essence of ginger, lime water, and sweet spirits of nitre.

Of the eleven first named, a convenient quantity to have would be two fluid ounces; except of No. 3, oil of cloves, of which a fluid drachm would be plenty, and No. 7, the magnesia, and No. 8, the mustard, of both of which an ounce would suffice.

The laudanum and paregoric ought to be in bottles of an altogether different shape from that of those containing the other remedies; and they, and that of the oil of cloves, should be marked *Poison!* and have a tape tied to their necks, so that it could be felt in the dark. Each bottle should have its proper dose on the label.

DOSES AND USES OF THE MEDICINES.

1. **Ammonia.** The aromatic spirits of ammonia —not hartshorn—is a valuable remedy in cases of sick stomach, and even vomiting. It is also useful in cases of nervous or sick headache, as well as in simple nervousness. The dose is, for an adult, twenty-five drops; for a child, ten drops, in about a wine-glassful of water. This may be given every ten minutes, almost indefinitely.

2. **Assafœtida.** The tincture of assafœtida is a nerve tonic, and also very soothing to the bowels. There is nothing better for causing the expulsion of wind. The dose is, for an adult, a teaspoonful; for a child, twenty drops, in a tablespoonful of water. It can often be used as an injection when it could

not be given by the mouth. In this case, the quantity to be given is a tablespoonful for an adult and a teaspoonful for a child, in a small teacupful of warm water.

3. **Cloves.** The oil of cloves is useful as a local application in toothache. It is also helpful in indigestion, in doses of three drops for an adult, and one drop for a child. It can be given rubbed up with a little sugar, or in a teaspoonful of sweet oil.

4. **Hoffman's Anodyne** is useful in cases of hysterics and nervous fright or chills. The dose is, for an adult, a teaspoonful in a wineglassful of water. Children rarely require medicines of this sort. But when they do, as is the case with certain high-strung children, half the dose for an adult may be given.

5. **Ipecac.** The syrup of ipecac is a fairly good emetic. But it must be used freely. An adult should be given a good tablespoonful, and an infant as near a teaspoonful as possible. It will do no harm, and when an emetic is called for, it is no time to run any risk that the dose given may not be large enough. It is often usefully employed in cases of poisoning, convulsions, croup, whooping cough or asthma.

6. **Laudanum.** Laudanum is the tincture of opium, and has all its properties. It is one of the most useful drugs in the world, and yet it is a dangerous one. There need, however, be no fear of poisoning with any preparation of opium if ordinary doses are given, and if these doses are not given closer

together than half an hour, and if they are *stopped* as soon as pain is decidedly lessened or drowsiness comes on. Occasionally, small doses of opium cause great alarm, but there is much less fear about opium poisoning among doctors now than there used to be. It may be considered safe to give twenty-five drops of laudanum to any adult, when there is severe pain, and to repeat this dose every half hour till the pain is lessened or drowsiness begins to appear. One of the signs of the effect of opium on the system is a contraction of the pupil of the eye, which does not expand in the dark. This ought always to lead to a discontinuance of any preparation of opium which has been used.

To check diarrhœa, sometimes, a drop of laudanum every hour will prove successful very soon. Yet, ten or fifteen drops may be given to an adult *after each movement*, if the smaller quantity does not suffice.

For cuts and bruises there is no better application than pure laudanum. A soft cloth soaked in laudanum can be bound on, and occasionally wetted with it, without removal. It quiets pain and promotes healing. The same application is often very soothing in face ache, toothache and earache, as well as in the pains of rheumatism and neuralgia. (See "Paregoric.")

7. **Magnesia.** Magnesia is a mild remedy to open the bowels, usually employed for children.

The dose being a teaspoonful, given in water or milk. It may also be used for sour stomach, when a pinch will generally be enough.

8. **Mustard.** In the use of ground mustard for plasters it should always be mixed with an equal part of flour. Even then it acts quickly and must be removed in a few minutes, as soon as the skin is well reddened. Where it is desired to leave a mustard plaster on for more than a few minutes, it should be made of one part mustard to three or more of flour. Every mustard plaster should be removed as soon the skin becomes red, and not allowed to make a blister, because such blisters are excessively painful and very hard to heal.

As an emetic, mustard is used by stirring a teaspoonful of the ground seeds in a teacupful of lukewarm water.

9. **Paregoric.** Paregoric is an opium preparation which contains, besides opium and other things, some camphor. It is the best preparation for children, because the dose is easier to measure than that of laudanum. An infant a few hours old will stand three drops, and in a few days, five. In a month, ten are not too many, and twenty may be given any time after six months. An adult can take a tablespoonful. It may be used internally in all the cases where laudanum has been recommended. (See "Laudanum.")

10. **Rhubarb.** The spiced syrup of rhubarb is an excellent mild laxative for the bowels. A teaspoon-

ful is the dose for an infant or small child. It is useful at the beginning of a diarrhœa in children, as it empties the bowels of what irritates them, and also has a soothing and healing influence.

11. **Turpentine.** Spirits, or oil, of turpentine can be used wherever mustard has been recommended as an external application. For this purpose a soft flannel or muslin cloth should be dipped in turpentine, wrung out nearly dry, laid on the surface and covered with oiled silk or a few thicknesses of dry cloth, to prevent evaporation.

Red pepper may sometimes be used instead of mustard, though it is more energetic in its action. When moistened and applied to the skin red pepper first causes a feeling of warmth, and later of intense, fiery burning. If left on long enough it will cause a blister. But this ought never to be done. Red pepper may be used in cases of colic or cholera morbus, where it quiets pain by its counter-irritant effect, and stimulates the nervous and circulatory systems. In nausea it sometimes does good by the latter process.

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